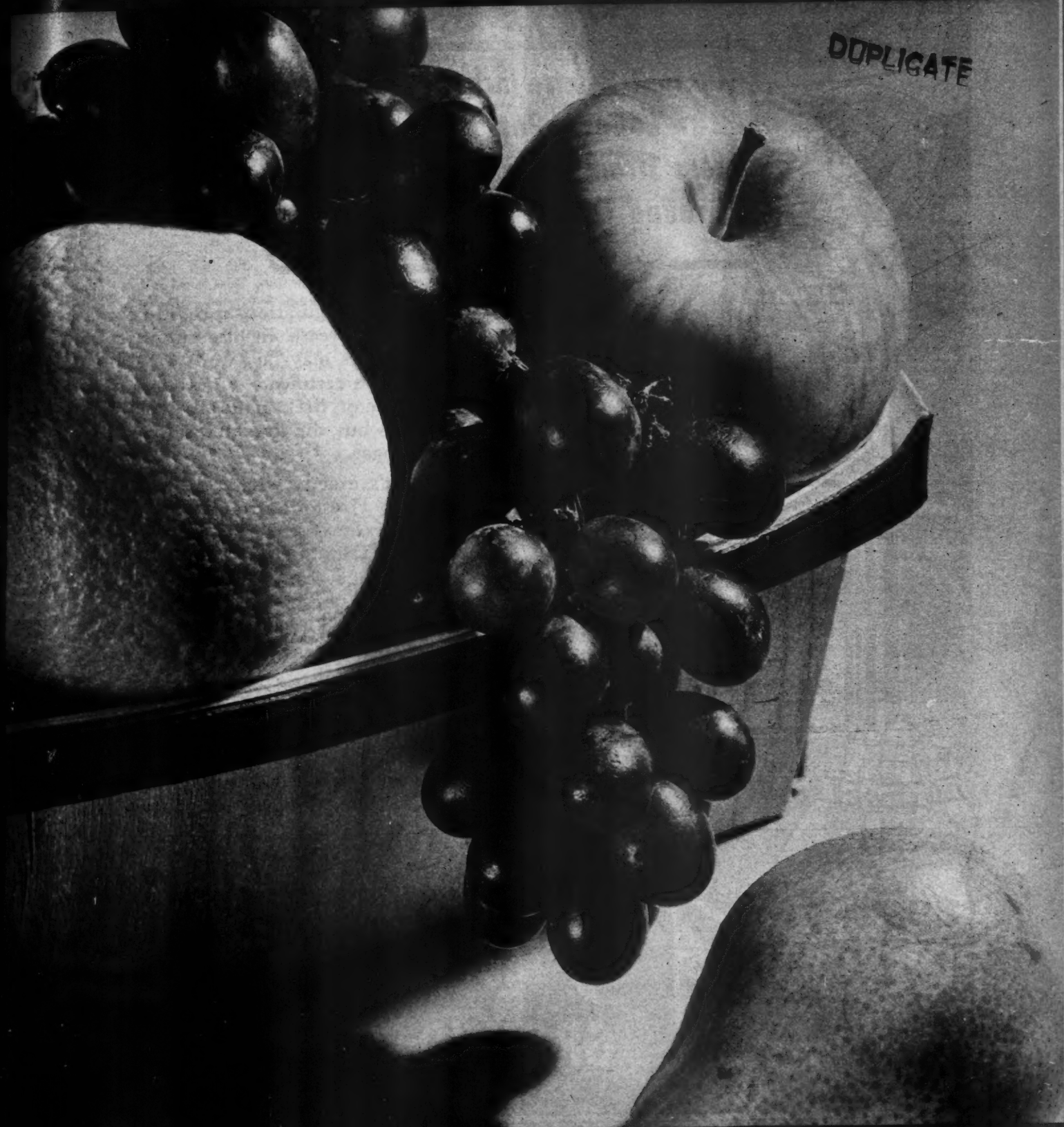


THIS ISSUE 50 COPIES

AMERICAN FRUIT GROWER

DUPLICATE



BUY THE TRACTOR TIRES THAT STAY ON THE JOB LONGER!

**Up to 215 Extra Inches of Traction
Bar Length Per Tractor Puts
Less Strain on Each Bar—Makes
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***Mr. EXTRA TRACTION**

NEW rationing regulations provide for a substantial increase in the number of tractor tires farmers may buy in 1943. When you obtain a ration certificate to purchase new rear tractor tires, naturally you will want to buy the tires that stay on the job longer.

That's exactly what you get when you buy Firestone Ground Grip Tires. At no extra cost they give you up to 215 EXTRA inches of traction bar length per tractor, which means longer life and greater traction.

Furthermore, each major traction bar is triple-braced to prevent wobbling and tearing off at the base. That's another reason Ground Grip Tires last longer.

See your nearby Firestone Dealer or Store today. Buy the tires that give you longer, more economical service.

Listen to the Voice of Firestone with Richard Crooks, Margaret Speaks and the Firestone Symphony Orchestra, under the direction of Alfred Wallenstein, Monday evenings, over N. B. C.

Firestone

GROUND GRIP TIRES

Champion Fruit Grower Says:

"After using Myers sprayers 20 years I still take off my hat to Myers"

1. Uniform Pressure
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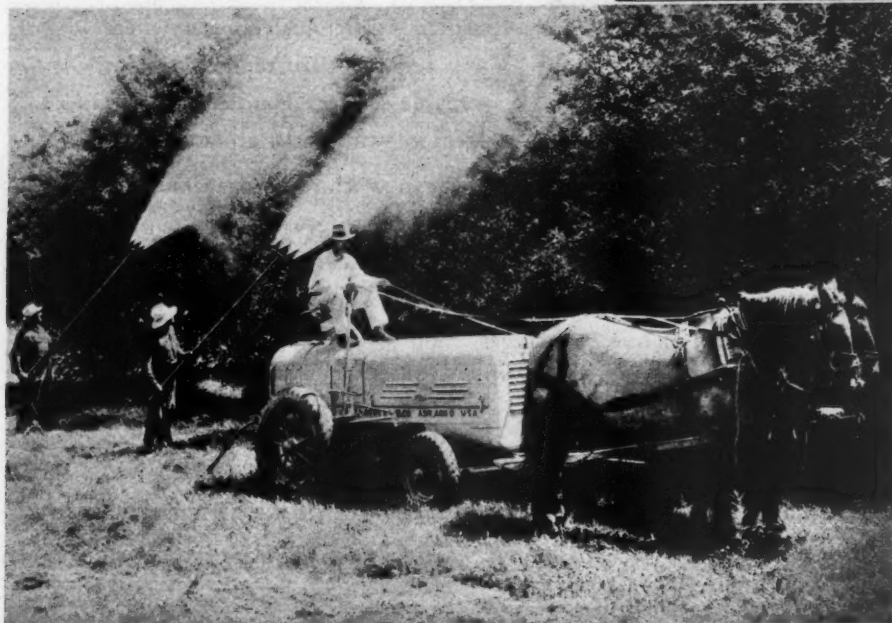
Few orchardists have won as many prize awards as Mr. Herbert Koontz, Louisville, Ohio. He has literally hundreds of State Fair awards to his credit.

How did he do it? Here's his success formula: "Know the orchard pests that must be dealt with—know when they attack—know the proved materials that will stop them—and be sure to use a dependable and efficient sprayer for the fighting job!"

Mr. Koontz says: "Twenty years ago I bought my first Myers sprayer. Twelve years later, with additional acreage to take care of, I bought a larger Myers and sold the old one to my neighbor. Both sprayers are still going strong. Myers uniform pressure helps me get the thorough coverage I insist on. I know, too, altho I've had no need for repairs, that service is always available and that's a big point in favor of Myers equipment."



Above — Mr. Koontz with five of the prize awards he won at the 1941 Ohio State Fair. His 1941 prizes alone included 32 blue ribbons and a special award.



Left — Heavy duty Silver Cloud Power Sprayer—typical of Myers modern spraying equipment.

Send for This FREE Manual on Care and Maintenance

Get this free new Myers book and see how it can save you unnecessary service calls. Tells how to care for your equipment and make minor adjustments and repairs. Contains useful information on sprayers and all types of pumps and water systems. And remember, replacement parts are available from your Myers dealer for every Myers sprayer ever built. Order repairs early—and mail coupon!



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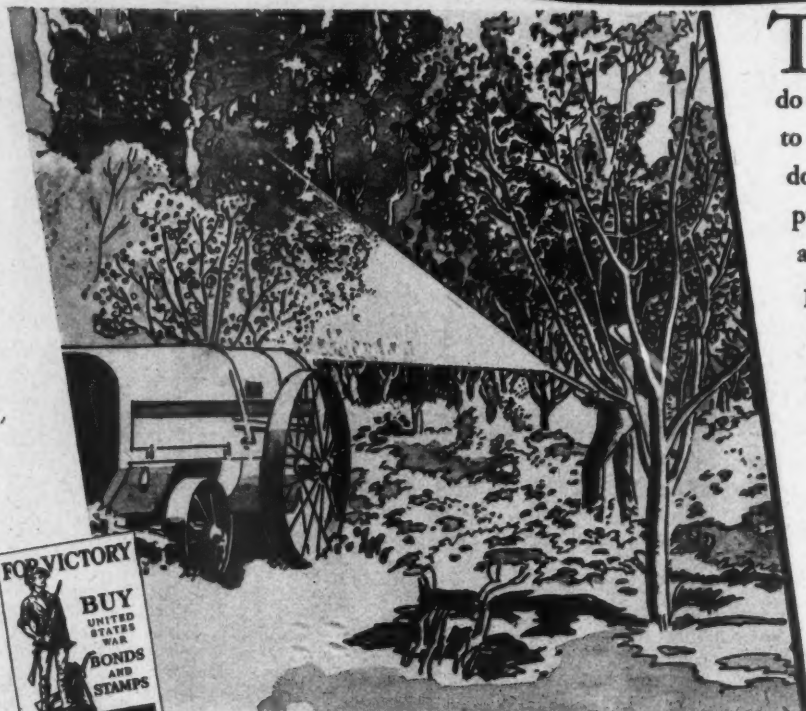
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Last Longer.*



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THAT old Hardie Sprayer can do a lot more in orchard or grove to help win the war than it can do in a scrap pile. And you can put it into condition for work easily and inexpensively.

Repair parts, replacements, all service materials regardless of year or model are readily available. Even complete new pumps, new hose, improved guns can be obtained to replace worn out equipment. Hardie dealers everywhere are tuned-up to render prompt, capable service. Hardie repair and replacement stocks are adequate.

The new Hardie Sprayers will be rationed to growers by County Rationing Boards. Many may not be able to obtain new Hardies without delay, if at all. So let us help you carry on with your old Hardie.

THE HARDIE MFG. COMPANY

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THE ONLY SPRAY PUMP THAT IS *Completely Lubricated*

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DEPENDABLE SPRAYERS



Yes, Governess, we get the point

WHEN Banker Dalrymple's little boy sat down to dinner his austere governess remarked, "Eat, Algernon. *But don't over eat.*"

Such a policy of conservation must also be followed in the use of many things that are used to grow food including insecticides and fungicides.

The Government will give manufacturers all the raw materials they can—and manufacturers will give growers as much as they can produce with these materials. All must use what they get for the

most important food crops.

Du Pont is producing every possible pound of important insecticides and fungicides for your use. We suggest that you use them conservatively in accordance with your Federal and State recommendations. The sure result will be a higher quality and greater quantity of nourishing, essential foods for America and her Allies.

E. I. du Pont de Nemours & Co. (Inc.) Grasselli Chemicals Department, Wilmington, Delaware.

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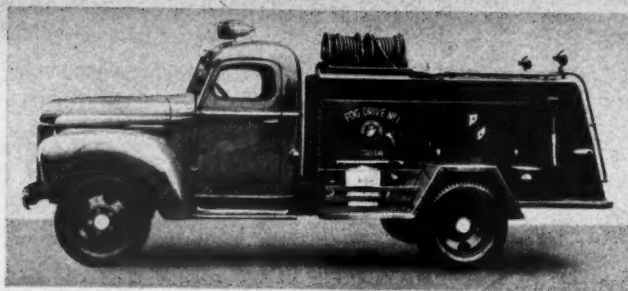
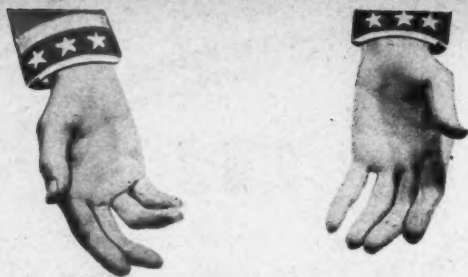
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Education... and more. The film story of du Pont Pest Control Research in color and sound. A trip through one of the most unusual laboratories of its kind in the world. Write for descriptive folder. 2504 Nemours Building, Wilmington, Del.



INSECTICIDES AND FUNGICIDES

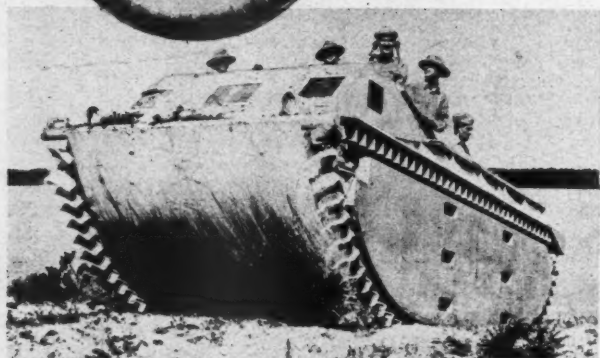
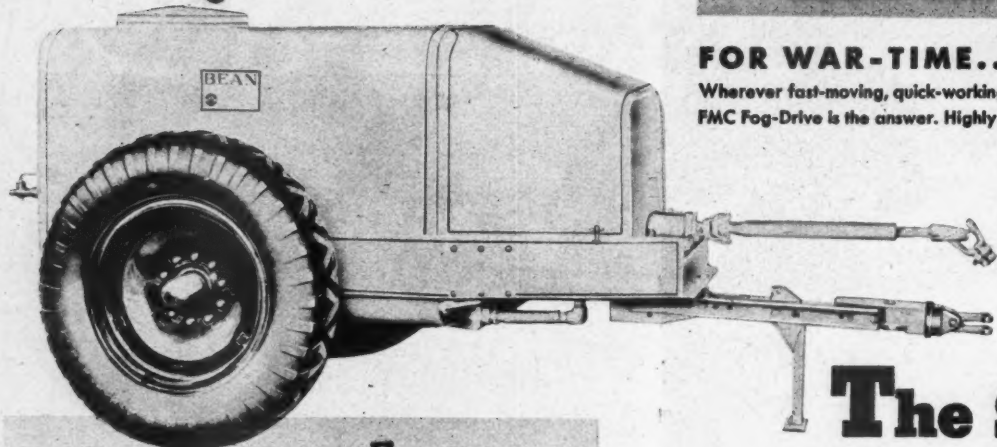
*DUREXFORM Lead Arsenate	Lead Sulfur	Paris Green	*BLACK LEAF "150"
*GRASSELLI Lead Arsenate	Calcium Arsenate	Copper-A Compound	*FLUXIT Sprayer
*SULFONOL Wettable Sulfur	Spray Oils	Floation Sulfur Paste	*PARAFONT Parathionchloride
*DUTOL Fluorine Insecticide	Copper Sulfate	Bordeaux Mixture	Zinc Sulfate—Flake
Sprayer-Sticker	Sulfur	*BLACK LEAF "40"	*PARMONE Worming Spray
*LORD Contact Insecticide			Cryolite (crystallized)
			*Trademark



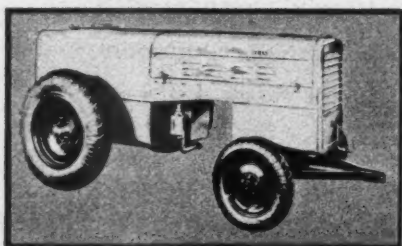
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Wherever fast-moving, quick-working, fire-fighting equipment is needed, the FMC Fog-Drive is the answer. Highly effective against all hard-to-fight fires.

Carries its own water supply. Extinguishes by high-pressure fog... "cold steam"... at 600-800 lbs. pressure. For air fields, rural areas, and wherever fast work is vital.



These famous ship-to-shore amphibian tractors are built in the Florida plant of Food Machinery Corporation. They're doing a whale of a job, and we're following their success with the keenest interest.



BEAN BUILDS A COMPLETE LINE

of Power Sprayers, four-wheel and tractor-pull, in 15-, 20-, 30-, 35- and 55-gallon capacities. Pumps designed particularly for today's high pressures. Also power and traction Crop Sprayers and Dusters, Cleaners and Graders for both orchard and row crops.

The Same Tough Ruggedness in All Three!

★ **Unfailing Performance!** It's true of the amphibians. It's true of the Fire Fighters. It's true of BEAN Sprayers.

The same tough, rugged dependability is built into them all. And all are important in America's great drive for Victory. Keep your BEAN rolling for Victory production. Now... more than ever... you will appreciate its time-saving, labor-saving performance... free from annoying and costly delays.

We're continuing to build sprayers where they do not interfere with war work, and can supply them where they're most needed. Keep your BEAN rolling if you're already an owner. Talk with a BEAN dealer about a new one if you must have new, larger or more equipment.

REMEMBER... a BEAN Sprayer is a sound investment, not just for the duration, but for years to come.

JOHN BEAN MFG. CO. Division of Food Machinery Corporation
15 Hosmer Street, Lansing, Michigan
104 West Julian Street, San Jose, California

Please send your 1943 Sprayer Catalog to:

Name.....

Address.....

No. of Acres.....

Kind of Fruit.....

SIGN AND SEND THE COUPON for Complete BEAN Sprayer Catalog

BEAN SPRAYERS

KEEP 'EM ROLLING FOR VICTORY PRODUCTION



E. G. K. MEISTER, *Publisher*

KEEP YOUR BOY ON THE FARM

THE farm front is a "fighting front" in this war. Total war on world-wide lines has made the task of vital food production a terrific one. And the armies of skilled workers on the farm front have just begun to fight.

So vital is the need of food to win the war, that labor has been frozen on the farm, and termed essential, just as essential as soldiers on the firing line.

You already know, perhaps, that if you are a grower with sixteen acres or more in tree fruits, or slightly more in berries, you qualify for the 16 essential units which entitle your boy to draft exemption and keeps him on the farm as an essential war worker. Thus has the government solved by directive the desperate needs of keeping trained, experienced workers on fruit and other types of farms.

So far so good, but the government has not put glamour into staying on the farm. Instead of a uniform, the essential farm worker will still wear overalls. In place of Garand rifle and gleaming bayonet, the fruit farm worker will still go into battle with spray gun and pruning shears. Essential, but not inspiring perhaps, to a young man who yearns for adventure in foreign places.

As a father, as well as a fruit grower, you have the responsibility, and under the conditions, the honorable one, of keeping your boy on the farm as an essential worker in winning the war. It is your duty to make him see that his duty to himself and his country makes it imperative that he remain on the farm front. In winning the war in this way he will not be awarded chevrons, but in place of them he will win the respect and gratitude of the American people and also of the populations of our Allies.

The war and the forces at work behind the war are bringing great social changes in our nation and in the world. With these changes, agriculture, in its many forms, is being given greater rights and greater responsibilities. The farm is again winning back recognition as the very foundation stone of state and society. Persuade your boy to see and understand this fact. Convince him that the farm family which remains united and steadfast becomes one of the very roots of the nation, feeding and strengthening our national life, indispensable and essential. Keep him on the farm to help win the war.

JANUARY, 1943

AMERICAN FRUIT GROWER

FOR VICTORY



BUY UNITED STATES WAR BONDS AND STAMPS

"MY COUNTRY 'TIS OF THEE"

AS newly appointed administrator of the food program, Secretary of Agriculture Wickard announced a food advisory committee to assist him in carrying out the nation's wartime food production and distribution program. The committee will submit estimates of food requirements for various needs prior to the making of food allocations by the Agriculture Department. Members are: Major Gen. Edmund B. Gregory, Rear Admiral W. B. Young, Edward R. Stettinius, Edwin W. Gaumnitz, M. Lee Marshall, Abe Fortas, H. W. Parisius, and Roy F. Hendrickson. Respectively these men represent the War Department, Navy Department, Lend-Lease Administration, Board of Economic Warfare, War Production Board, Interior Department, and food production and distribution sections of the Agriculture Department.

★
GROWERS operating farms of ten or more acres may install used gasoline dispensing pumps and storage tanks, according to the War Production Board. The pumps and storage tanks must be installed exclusively for equipment used directly in farm operations on the individual farm.

★
BY a new Selective Service release, an acre of apples makes up one unit, sixteen of which provide exemption for one man from active military service. The new plan of the Selective Service rates each crop and the quantity needed to make up a unit. A man may be deferred if he is handling 16 units of specified farm crops or livestock. It is important to note, however, that this does not provide automatic deferment since final decision rests with the local draft board.
(Continued on page 26)

PAGE 7



TREES of weaker fibre have come and gone but life is strong and vigorous in the ancient pine. In the end it too must fall but the time is not yet. Anchored to the mountainside, battered and tossed for generations by the elements, it will see another season through . . . and still another. Lesser trees have yielded to the years, but this one has what it takes.

In mankind also, and in the relationships of humankind, we may seek out these differences. . . . It is much the same with the machines men build. Only in the degree that men will it so, can there be in their machines a measure of ENDURING LIFE.



PHOTOGRAPH BY JOHN KABEL

What Counts NOW in the Things We Cannot Replace Is QUALITY and ENDURING LIFE

Only two summers ago we of International Harvester, and you who use so many of the farm machines we build, could not have seen the full meaning of the situation that now faces Agriculture.

Always in the past, when bumper crops were in prospect, you have called for an abundance of tractor power and new equipment, and the farm equipment industry has supplied it. This year, as manpower shortage threatens the food production that is vital to the nation's life, few of you can buy new machines. It is swords, and not plowshares, that must have first call on steel.

The year that lies ahead will be a time of toil such as Americans had reason to believe would not be their lot again. It will be a year of new pioneering . . . and Victory and peace will be the goal. It

will be a year to be grateful for enduring life, wherever you may find it, in the tractors and machines you have—for they must take the load and do the job. Millions of you will now put to the final test the materials and the workmanship that have been built into each product of International Harvester. Each one has brought to you a generous measure of quality—an added value to be reflected in faithful performance. In the long run, always, this quality has *paid out*. And now, suddenly, it is *precious* beyond any price.

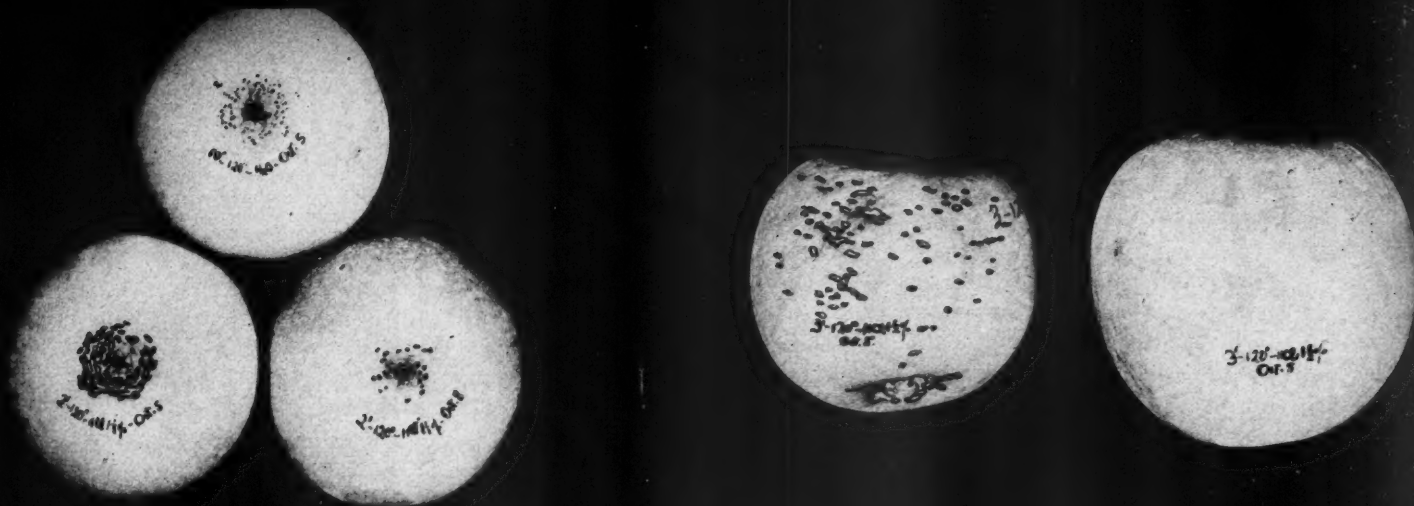
Now that every piece of usable equipment *must* see another season through, we remember the rule set down a century ago by Cyrus McCormick—"Build the Best We Know How!" We are grateful to a later generation of management for the watchword of International Harvester

manufacture—"Quality is the Foundation of Our Business." Emblazoned over the entrances of our plants, it is the watchword of the men who build McCORMICK-DEERING and INTERNATIONAL.

This year many of you will have need of every ounce of the good wear that is in your Harvester machines. . . . You will have need, also, of the faithful services of the International Harvester dealers. They can help you work wonders with the old machines you would in normal times be ready to discard. Their service is your mainstay now. Your problems are their problems. They are pledged to see you through, until such time as new equipment may be available again to all.

INTERNATIONAL HARVESTER COMPANY
190 North Michigan Avenue, Chicago, Illinois

INTERNATIONAL HARVESTER COMPANY



MILD WASHING INJURY. Apple at lower left washed in acid when picked; apple at right after three days. Upper apple washed for a longer period in water only. The area around the calyx is the most sensitive part of the apple. Surface checks are concentric. (Injuries are outlined in ink to show location.)

SEVERE WASHING INJURY. Apple at left washed in acid when picked; apple at right after three days at approximately 70° F. Delayed washing decreases injury but increases difficulty of residue removal. Severe injury results in rapid wilting. (Surface checked outlined in ink to show location.)

CLEAN APPLE PRODUCTION FOR 1943

THE LEAD TOLERANCE AND WASHING PROGRAMS

By W. A. RUTH

Chief in Pomological Physiology,
Department of Horticulture,
University of Illinois

THE subject of spray residue tolerances has many aspects. It involves, at one and the same time, problems in human and animal physiology and pathology, entomology, chemistry, physics, economics, horticulture, plant physiology, mechanical engineering, law, including enforcement, and, last but not least, human psychology and medical and nonmedical education and opinion. The absorption, storage, and release of lead by the body are physiology, injury to the fruit is horticulture and physiology, insect control is entomology, residue removal is partly physics, the construction of washing machinery is engineering, the acceptance or nonacceptance of facts is psychology, and the dissemination of facts is education.

Any one of these aspects, for example, the human physiology, can be uppermost at any time, affecting the situation in an entirely practical way. Naturally, the relative importance to any individual of any phase of the problem varies with and depends upon the knowledge, mental characteristics, and background of that individual. Naturally, also, it is impossible for any one individual to know all of the facts which may be pertinent; for the physiologist, for example, to know the horticulture, or for the horticulturist to know the physiology. This is unfortunate, because all of these sciences and arts enter the picture. The war presents still more problems.

This introduction brings us to the specific question of what tolerances are and to the equally important question of where and how they must be set. The following sentences taken

from the Food and Drug Law, as revised in 1941, answer these questions.

"Any poisonous or deleterious substance added to any food, except where such substance is required in the production thereof or cannot be avoided by good manufacturing practice shall be deemed to be unsafe . . . ; when such substance is so required or cannot be so avoided, the Administrator shall promulgate regulations limiting the quantity therein or thereon to such an extent as he finds necessary for the protection of the public health. The Administrator shall take into account the extent to which the use of such substance is required or cannot be avoided . . . and the other ways in which the consumer may be affected by the same or other deleterious substance. . . . The Administrator, on his own initiative or upon an application of any interested industry, or substantial portion thereof stating reasonable grounds therefor, shall hold a public hearing upon a proposal to issue, amend, or repeal any regulation. . . . At the hearing any interested person may be heard in person or by his representative. . . . The Administrator shall base his order only on substantial evidence of record" (i.e., evidence introduced at the hearing) "and shall set forth as part of the order detailed findings of fact upon which the order is based." Once this hearing has been held, the tolerances established become "legal"; apples or other food exceeding tolerances established after such hearings are automatically proven to be unsafe for human consumption. So

far, the lead and arsenic tolerances on apples are "administrative;" the Food and Drug Administration must be prepared to prove, in every case of seizure, that the spray residue found, beyond that allowed, is harmful. If and when a public hearing is held to fix legal tolerances, it will be necessary for the apple growers to introduce, or have introduced, the experimental evidence justifying the maintenance of the tolerances at their present levels.

The first residue tolerance applied by the federal government to apples in interstate commerce was the tolerance of .025 grains of arsenic, as arsenic trioxide, per pound of apples. This was put into effect in 1927; by 1932 this tolerance had been reduced to .01 grains per pound, which is the English, or "international," tolerance. In 1933 the federal government established a lead tolerance on the advice of a committee of scientists, who were largely toxicologists. The lead tolerance set at that time was .025 grains per pound; this tolerance also was reduced until, in 1935, it stood at .018 grains per pound. Since opinion at that time was that lead was fully as toxic as arsenic, and since there had been no comprehensive research on this specific problem, that is, on the actual toxicity to human consumers of lead arsenate residues on apples, there was every prospect that the lead tolerance would be reduced to a still lower figure.

Since 1935, however, on the basis of extensive and comprehensive research on this specific problem conducted by the United States Public

(Continued on page 22)

CAMERA PICKING AND PACKING GOLDEN DELICIOUS APPLES AT A MISSOURI ORCHARD CLOSE-UPS

PHOTOGRAPHS BY
FRANK ROSS



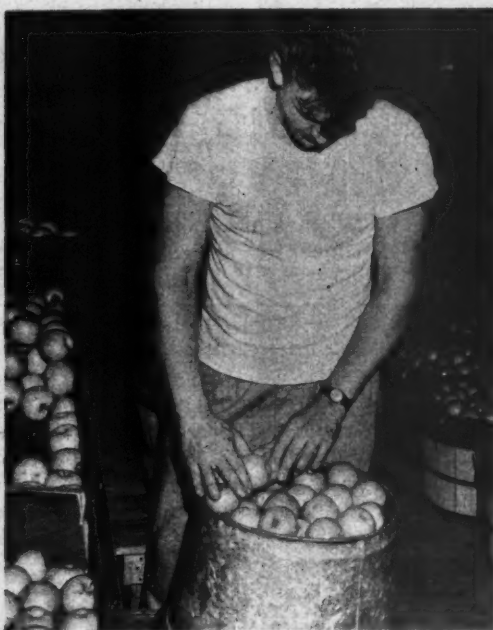
PICKING . . . reaching for the topmost apples rich with the golden color of the sun.



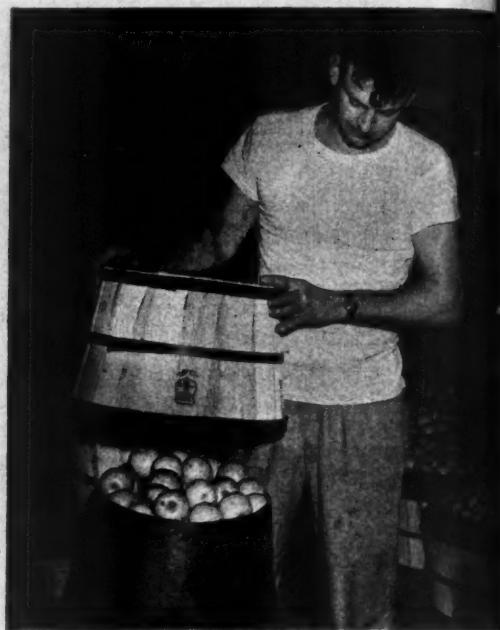
BASKETS OF GOLD . . . carefully filled, to prevent bruising, from bulging picking bags.



GRADING . . . smiling girls help regiment the apples as they pass through the machine.



PACKING . . . quick, skilled hands complete the pack, soundly good top and bottom.



ON GOES THE BASKET . . . with liner in place bushel basket is slipped over the pack.



TOPSIDE UPI . . . with pack reversed and complete ring pack form is now removed.



MERCHANDISING STAMP . . . Onto the basket cover goes the state tax stamp.



GOLDEN DELICIOUS . . . Ready for market these beauties will be in great demand.

THE FERTILIZER SITUATION FOR 1943

By J. R. MAGNESS

THE American fruit industry produced in 1942 one of the largest fruit crops on record. All important fruit crops in the United States except prunes were average or above in size and many were unusually heavy. Our country will be fortunate, indeed, if a crop of similar dimensions can be produced in 1943. Since many fruit trees tend to be somewhat biennial in bearing, perhaps we can hardly hope for a 1943 crop equal in size to that just produced. We know that the strawberry acreage is going to be much smaller in 1943 than in 1942 and many of the tree fruits probably will not equal the 1942 production.

Since the demand for fruit will undoubtedly be as great in 1943 as it has been in 1942, it is the patriotic duty of every fruit grower, as well as good sound business, to produce as much fruit as possible. All tree fruits have been tentatively placed in Group 1(B) in the crop priorities rating of the Department of Agriculture which group includes the food crops, maintenance of production of which is most essential from the standpoint of national welfare. This classification not only indicates the importance of these crops from the standpoint of national welfare but also assures the growers of these crops the necessary materials for their production in so far as these materials are available for agriculture as a whole.

First and foremost in any discussion of the fertilizer program for orchards in 1943 is the question of what fertilizer materials will be available for the crop year. Present indications are that the total supply of mineral nitrogen for essential crops in 1943 will be approximately equal to that used on these crops in 1941 and slightly greater than the supply for 1942. Present indications are that all of the phosphate and potash fertilizer needed by agriculture will be available for 1943.

The probable supplies of actual nitrogen in fertilizers for agriculture for 1943, as compared to 1941, are as follows:

	Tons actual nitrogen	
	1941	1943
Ammonium sulphate.....	138,248	160,000
Sodium nitrate.....	146,300	172,000
Cyanamid.....	25,700	9,000
All other chemicals.....	100,250	17,000
Natural organics.....	51,410	50,000
Total.....	456,908	408,000

These estimates indicate a reduction in total nitrogen supply for American agriculture of between 10 and 11 percent in 1943 as compared to 1941.

Since all tree fruits have been placed in the highest food crop class in the listing of farm production essential to the war, they will receive their full quota of fertilizer materials in 1943 within the total supplies available, says J. R. Magness, who as Head Horticulturist in Charge, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Agricultural Research Administration, U. S. Department of Agriculture, forecasts the fruit crop for 1943 and tells what fertilizers will be available this year under the war emergency program, as well as what to do about it. A careful reading of this important article will give you facts, instead of rumors, about the 1943 fertilizer situation.—Editors.

The total available nitrogen for all fruit crops will probably be essentially the same in 1943 as were actually used on those crops in 1941. All tree fruits have been placed in the highest food crop class in the listing of farm production essential to the war. Thus they are assured their full proportion of the fertilizers, and other necessary materials, within the limit of the total available. It is expected that certain governmental orders such as prohibiting the use of mineral nitrogen for such non-essential uses as lawns, golf courses and parks and on fall-sown small grain intended for harvest, will result in a saving of at least 40,000 tons. Thus the supplies for essential crops for 1943 will probably be practically the same as the amount used on these crops in 1941.

While the total quantity of mineral nitrogen for 1943 will apparently be nearly the same as that for 1941 for essential crops, the distribution of the kinds of nitrogen may be quite different. Most of the nitrates will be in the Southern States and on the Pacific Coast. Normally, fruit growers in the Pacific Coast States have used mostly sulphate of ammonia, as many of their soils tend to be alkaline. For the duration, they will have to use considerable quantities of nitrates because of the transportation situation. Most of the sulphate of ammonia is manufactured in the northeastern part of the United States as a by-product of the steel industry. In order that railroad freight, already taxing the capacity of the roads, may not be further increased, there will be a tendency to use sulphate near the areas of manufacture. Fortunately, ammonium sulphate and the nitrates can be used interchangeably on orchards without serious consequence. Sulphate of ammonia tends to increase the acidity of the soil, and if used in orchards growing in acid soil for several years, the soil will require a supplemental lime treatment. Continued use of nitrate of soda on neutral or

alkaline soils tends ultimately to create unfavorable soil conditions due to sodium accumulation. During the present emergency, the use of whichever of these materials is available in the area will be necessary, and either will supply the nitrogen needed by the trees without serious and permanent difficulty.

Careful investigations conducted at the Bureau of Plant Industry Station, Beltsville, Maryland, have indicated that the total amount of nitrogen per year actually removed from the soil by a 25-year-old apple tree bearing 600 pounds of fruit and which is regularly fertilized, is approximately 1.5 to 1.7 pounds per year, of which approximately 0.7 pounds is returned in the form of fallen leaves and flowers. Thus the tree requires each year an intake of from 1.5 to 1.7 pounds actual nitrogen although the actual removal from the orchard will generally be less than 1 pound per tree per year. On the basis of one pound, this is the total nitrogen that would be contained in approximately 6½ pounds of nitrate of soda or 5 pounds of sulphate of ammonia.

While these figures give a basis for considering the amounts of nitrogen to apply, they cannot be taken too literally. Not all of the nitrogen that is applied in the form of fertilizer actually enters the tree. Some is lost by leaching to below the level of root concentration and some may be taken up by competing plants. On the other hand, in any good orchard soil a limited amount of nitrogen is absorbed from the air and fixed by soil organisms. This quantity becomes large when legume crops are grown in the orchard. It seems safe to assume, however, and it is borne out by many fertilizer experiments, that such mature, full bearing apple trees should receive a fertilizer application of at least one pound of actual nitrogen per tree per year unless legume crops are being grown in the orchard.

(Continued on page 29)

"AN ORCHARD WITHOUT BEES IS LIKE A KISS WITHOUT A SQUEEZE"

SAYS FRUIT GROWER AND BEEMAN

HENRY H. SCHRIVER

AN old saying goes something like this: "An apple pie without cheese is like a kiss without a squeeze," and I could substitute "An orchard without bees" for the first phrase of that old saying and be well within my rights.

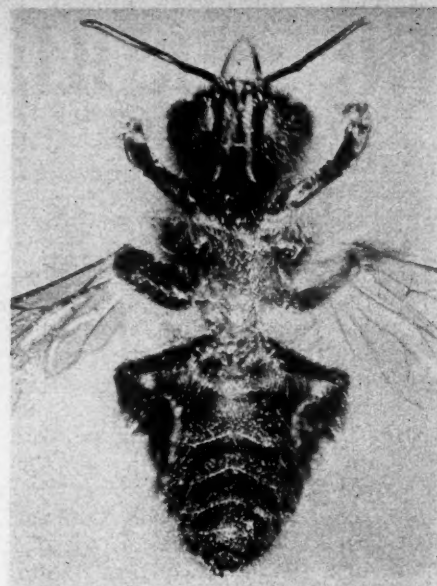
Since my earliest recollection I have always just taken the presence of honey bees in our orchard as a proper thing. This is only natural since my father has always had colonies of bees around about. With 200 or more colonies of bees on the farm our trees have never been subjected to lack of pollination due to a scarcity of workers to do the job. I have never, therefore questioned the importance of bees in helping to produce a fine crop of fruit. Their significance has been imprinted on my mind since I have had occasion to observe many instances where these essential little insects were lacking or were too few in number, and as a result poor pollination took place with a resultant lack of fruit at harvest time.

Bees working in the trees at blossom time are as important for adequate pollination as the fertilizer placed in the soil before bloom. No chain is stronger than its weakest link and that applies here, for no matter how careful you may be to furnish all the essential food elements required for a fertile blossom, or how lavish nature is with her elements,

if there are no pollinating agents all the other things are wasted.

I mean to include in my pollinating agents the wind that might blow the pollen from flower to flower or the raindrops that might wash it from flower to flower (in case of self-fruitful varieties) or the many wild bees or "solitary" bees that might do the job very well. These agents named are ones that might do the job, but with a crop of apples or other fruit at stake no grower should be satisfied with something that *might* work. You want something that *will* work. The nearest we can approach that "something," short of hand-pollination, is the honey bee. He only needs a few hours of sunshine to do a bang-up good job! I expect that is about as scientific about it as I can be. When you question just how many bees and how many hours of sunshine it will take I become lost in a maze of calculations.

I do know that a bee will work as long as the day is light or sunny. A bee operates by instinct, not to gather pollen, and carry it from flower to flower, but to gather nectar for the manufacture of honey, and if pollination takes place we, as fruit growers, should be very thankful that our purposes are served so well in such a casual manner. Here then we find a pollinating agent over which we may exercise some control.



Bee covered with apple pollen. Photograph courtesy Missouri Agricultural Experiment Station.

We may not know just how long to permit them to work so as to get just the right amount of pollination, but we can furnish them in sufficient numbers to do the job thoroughly. It is a relatively simple task as compared with spraying, or thinning but is surely just as important.

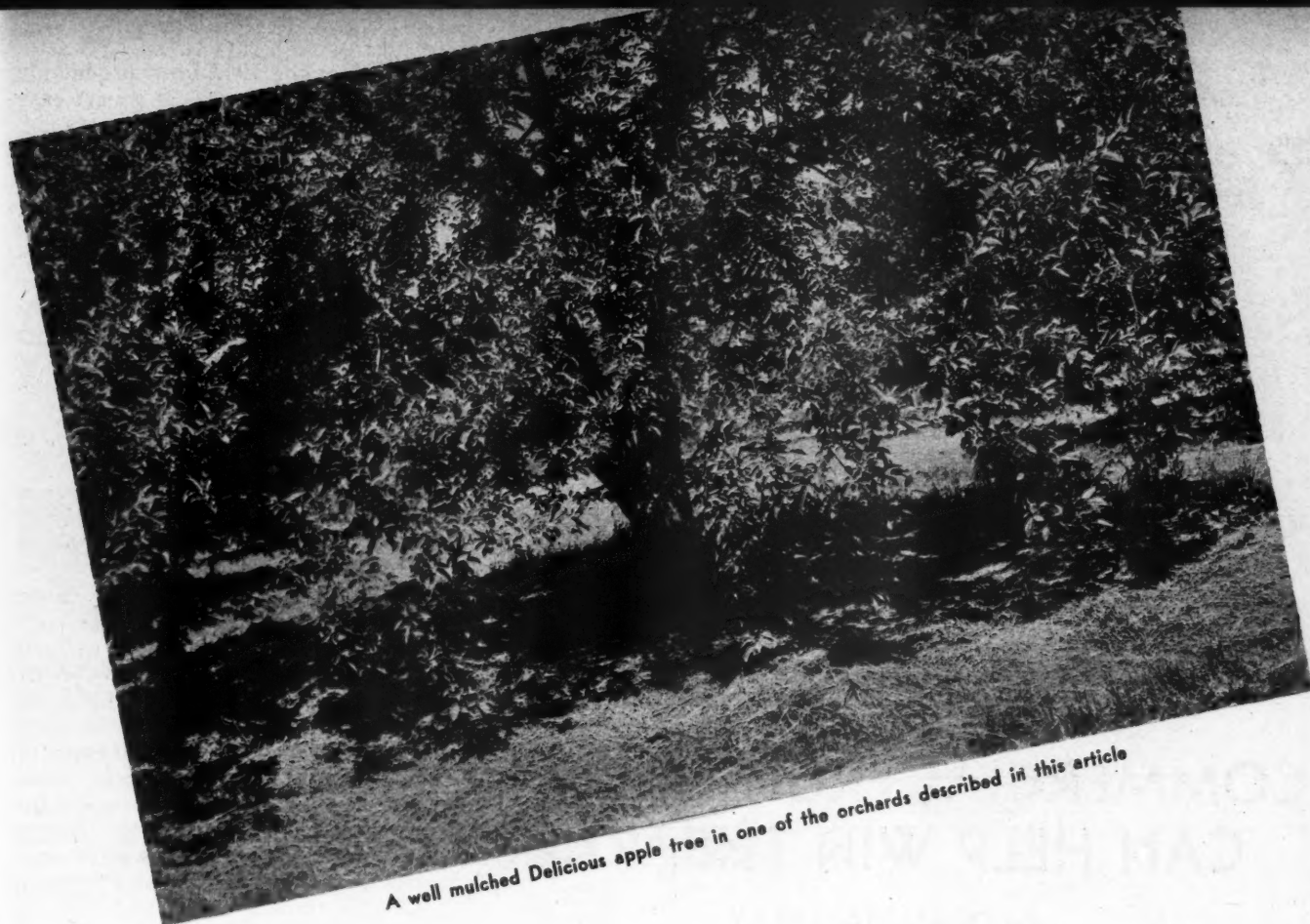
This brings us down to the question of "how" and "how much." One very important thing is that we must have the right varieties. In other words, the bee must brush into fertile pollen in order to pollinate. This sounds trite, but I have seen many instances where a large block of trees such as Stayman winesap, which has a very small percentage of fertile pollen, has been set out and the owner wondered why he didn't get a crop. Even the self-fruitful varieties such as Delicious, Wealthy and Jonathan probably will not set a full crop without some interplanting. In any case I would interplant pollinizing varieties, plant plenty of them, not as few as possible. With proper varieties, I would then set my colony of bees close under a tree with good viable pollen about one for every 35 to 50 trees. This goes for all tree fruits, though more bees on the stone fruits is surely no disadvantage. A bee has a peculiar habit of lighting near the hive after leaving and before returning. If his hive is under a tree which bears blossoms with fertile pollen he is more apt to pick up the good pollen and carry it with him when he goes to work on some other tree. In fact, he can hardly escape it if wind conditions are such that the pollen may be showering down all over and around his hive.

Now, I know what many of you are thinking. How am I going to get the little rascals where they belong? They do sting and that in itself is enough to discourage many an otherwise brave and hardy man.

(Continued on page 33)



Colonies of bees can be placed in the orchard shortly before the blossoms open and removed when blossoms drop.



A well mulched Delicious apple tree in one of the orchards described in this article

THE FERTILIZER VALUE OF AN ORCHARD MULCH

J. H. GOURLEY

UPPERMOST in the minds of those in all sorts of civilian industries is how economies of labor and materials can be effected. How can short cuts be made with the minimum of reduction in quantity and quality of the product. Agriculture shares in these problems and fruits are a conspicuous part of the food supply, just as are grains and livestock. Where can one compromise or substitute and still do the job? These are the questions of a war-time America.

Fortunately, fruit growing is an old industry, most everything has been tried once, and we go back to these experiences for answers to our questions on the one hand, and project new methods, on the other. The ingenuity of the fruit grower is impressive and we may confidently expect him to come through.

Many, but not all, orchards require more nutrients than naturally occur at any one time for maximum, or perhaps even minimum production. What is needed, and the amount, varies considerably in different areas and more is being learned about these matters from year to year.

The history of orchard fertilization is fascinating and it may be briefly sketched, as the writer sees it. Extensive experimentation with the fertilization of orchards dates from about 1910. The earlier efforts had to do primarily with increasing yields and

the growth conditions of the trees. The outstanding chemical element needed proved to be nitrogen. This was learned by simple "cut and try" methods. As a result, the orchard fertilizer program for a quarter of a century was *nitrogen only*. There were a few exceptions, however, through all this time, as some horticulturists recommended a complete fertilizer of some formula or other. Some advised the regular use of *lime* also. Orchardists also varied in their experiences, their practices, and their beliefs. As a result there was considerable controversy engendered and those whose business it was to sell fertilizers entered the picture in no modest way. But it would appear that this, like many another controversy, will end with several different views being correct, depending upon the local situation or the native composition of the soil.

At the present time, I believe experimental results will show that nitrogen and moisture are the factors more likely to be lacking in orchards of most of the country than any others. At a recent meeting in Chicago with the War Production Board, this fact was emphasized by all the Central States.

However, there are some rather large areas where this nitrogen pro-

gram only is entirely inadequate, for both experiments and experiences show that potassium is also necessary, and in others where phosphorus and calcium also are required for maximum efficiency and in others magnesium is deficient and in others copper, zinc, boron, and others must be supplied. These areas are notable on the coastal Plain Soils from Long Island southward and extending along the Gulf. In Canada and isolated places in the midwest and west, such areas are showing up also.

In other words, a departure from the nitrogen only program is widening, and doubtless other areas will be included as better interpretation of fruit quality and growth of trees is obtained. This situation should not, in the mind of the writer, be interpreted as a general recommendation for complete fertilizers, for he believes that it is still true that nitrogen and moisture are the limiting factors in a larger part of the interior orchard regions. Controversy in these matters is scarcely necessary, but rather a determination of the facts.

But the particular point which is assigned for this article is the value of mulches in supplying nutrients and to what extent such a practice could substitute for artificial fertilizers during the war-time period.

Investigations along this line have
(Continued on page 23)



High-quality fruit—grown by a professional orchardist

COMMERCIAL FRUIT GROWER CAN HELP WIN THE WAR

By DEAN HALLIDAY

Washington, D.C.

IN times of peace the commercial fruit grower of this country has a highly important place in our national economy. Just now in a time of war emergency his job on the home front is of ever-increasing importance.

The fruit grower, as well as other farm specialists must answer the rollcall of those who are being assigned the grave responsibility of achieving America's Food-for-Freedom goals for 1943—goals which call for the highest production in the history of American agriculture.

The goals, and the accompanying price support programs for 1943 were considered by the Foods Requirements Committee, of which Secretary of Agriculture Claude R. Wickard is Chairman. The committee regularly considers the military and civilian requirements and needs of the United Nations for United States food.

"The 1943 goals represent the most crucial and important task our farmers have ever been asked to perform," Secretary Wickard said. "The role of American food in the war strategy of the United Nations puts the farmer on the front line and dictates the trends of our 1943 farm production.

"The food resources of all the United Nations were considered fully before the U. S. farm goals were established. The goals represent the minimum requirements for food produced in this country. These require-

ments—for our own military forces and for our Allies—now represent about one-fourth of estimated total food production in 1943.

"Furthermore, as the United Nations' offensive progresses, we shall have the added responsibility of furnishing food for the people in the countries freed from the Axis yoke. We shall need to use our food to rehabilitate the people in these countries so that they will be able to join us in the war against the aggressors. We must not fail to keep faith with these people.

"We know—and farmers know,

too,—that the 1943 farm production job will not be easy. It wasn't easy this year, but in general farmers met the goals—and exceeded by 12 per cent the previous high record set in 1941.

"The Department of Agriculture has pledged its full resources in helping farmers meet the task ahead in 1943. This support will cover the whole range of facilities available for assisting in the production and marketing of essential farm products. I know farmers themselves will do everything possible to meet tight situations in regard to farm labor, machinery, fertilizer, and other production supplies. Only by working together, can we rise above most of these obstacles.

"The Department of Agriculture will use every resource at its command to ease the shortages of farm labor. This program will be directed to make labor available in six ways. These include: (1) the shifting of workers from non-essential into essential crops; (2) the retention of essential key operators and workers on farms through changes in deferment and employment policies of the Selective Service System; (3) the transportation and training of workers from surplus areas who can become year-around workers in the more diversified areas; (4) the transportation of seasonal workers to work in the harvest of speciality crops; (5) the use of high school youth during the summer months and (6) the use of volunteer city people to aid during the critical harvest seasons."

The commercial fruit grower has an important place in this picture of our food goals, because fruit is a food vital to victory. Our military forces are using tremendous quantities of fruit, in fresh, dehydrated and dried forms, both in this country and overseas. (Continued on page 25)



Typical farm orchard apple tree—dead at 20 years of age

Perfection
**IS
NO ACCIDENT!**



Use BLACK LEAF 40.. For Protection Against Aphids

An aphid sting . . . and the apple will never be the same again.
Constant vigilance is the price of first grade fruit.

Black Leaf 40 is effective protection against green and rosy aphid,
bud-moth, red bug, leafhopper, pear psylla and codling moth.

Black Leaf 40 can be applied with all standard sprays.

Black Leaf 155 . . .

Non-caustic protection for foliage
and fruit quality—controls codling
moth, aphids, leafhoppers, bud-
moth, leaf miners, pear psylla,
and grape berry moth.

4240



**ECONOMICAL
10-LBS. OF BLACK LEAF 40
MAKE 1000 GALLONS
OF EFFECTIVE SPRAY**

**Black
Leaf
40**

**TOBACCO BY-PRODUCTS & CHEMICAL CORP.
INCORPORATED • LOUISVILLE, KENTUCKY**

STATE NEWS

SOUTH DAKOTA—The 1942 fruit crop was very limited in the western part of South Dakota. T. D. Miller, operating an extensive orchard at an altitude of 4,300 ft., near Hot Springs, reports that a belated snow storm and freeze on May 10th, when most of the apples, plums and also currants and gooseberries were in bloom, or had set fruit, killed all such and only a few apple blossoms that opened after the freeze, set fruit. Pears were further along and had a good set, but were stunted by the freeze. Latham red and the Robertson black raspberries, wintered well without cover and with plenty of moisture, made a good crop. The local market easily absorbed all the best apples and the others were made into cider for which Mr. Miller is locally famous and for which there is always a good demand.—W. A. Simmons, Sec'y, Sioux Falls.

NORTH DAKOTA—Reports coming in from Victory Garden committeemen indicate that a high percentage of the people in the various communities are interested in the establishment of fruit plantings of various kinds. In the Victory Garden Program for 1942 some attention was given to fruit plantings of this type, but the most emphasis was placed upon the home vegetable garden both in town and country. It is now the plan to expand the fruit phase of the program for 1943. Hardy varieties of apples, crabs, plums, sandcherry hybrids, and small fruits developed specifically for the Northern Great Plains will make this program practical.—Harry A. Graves, Ext. Horticulturist, Fargo.

OHIO—Since last July a group of Ohio apple growers have been working on a cooperative plan for improving apple marketing in Ohio.

A survey conducted by this committee last fall showed considerable interest and a sizeable volume of apples that might be worked into such a program. Contributions from growers to set up such a program already total \$1,200. It was not felt advisable to start an actual program last fall due to the lateness of the season when this program got under way. However, the committee has been hard at work and will have an interesting plan to present at a state-wide meeting of growers when the Ohio State Horticultural Society holds its annual meeting in Columbus, January 26-28.

L. G. Dean, manager of the Grand River Orchards, Geneva, has been named by the committee to present the marketing plan at the winter meeting of the Society.

A weekly newsletter is going out to a large list of Ohio apple growers and reports actual sales by variety, size and grade, type of container and summarizes the changing trend in demand, movement and other factors that growers need to be posted on in connection with apple marketings.

Officers of the Ohio Apple Institute and the Rural Economics staff of the University have both cooperated in summarizing the growers' reports each week used in the apple marketing information newsletter.—Frank H. Beach, Extension Horticulturist.

MARYLAND—A combination of early maturity, weather, shortage of picking labor and heavy crops per tree caused an apple drop of 25 to 50% in various sections of Maryland. York, Stayman, Rome, and Black Twig were most affected. An increased allotment of tin containers to canners was of great help. A.M.A. officials could not ease the fresh apple situation by government purchase of these apples, as the fruit would have had to be moved faster than their set-up would allow. The National Apple Institute and Appalachian

Apple Service appealed to National Association of Food Chains, with the result that a special sales push was given drop apples during the week of November 2, in the states of Pennsylvania, Virginia, West Virginia and Maryland. The pack was No. 1 excepting that 10% surface area bruise was allowed. The fruit was of fine color and finish, generally. Appalachian Apple Service is the growers' organization for apple publicity in the above four states of the Cumberland-Shenandoah area.—A. F. Vierheller, Ext. Hort., College Park.

MICHIGAN—The seventy-second annual meeting of the Michigan State Horticultural Society was held in Grand Rapids December

1, 2, 3, with a very satisfactory attendance. Even with the beginning of gasoline rationing and some very bad weather, daily attendance was from 600 to 700, or about 25 to 30% less than usual. Michigan fruit growers realize the seriousness of these times and express their willingness to assume any hardships that are absolutely necessary in the winning of the war. Their chief items of concern in 1943 appear to be available labor, transportation and distribution of the finished product, and availability of materials and packages. The usual machinery exhibit was conspicuous by its absence and drove home the importance of taking good care of present equipment.

One theme that kept sounding throughout the session was the fact that it is just as important for fruit growers to follow through with a good job of advertising and merchandising as it is to produce good fruit. The quantity of apples displayed by growers was less than usual but the quality was exceptionally good.

The session closed with the apple auction. The sweepstakes bushel of Northern Spys grown by J. R. Bramer of Grand Rapids was sold for \$65. The sweepstakes plate of five

(Continued on page 26)

ANNUAL IOWA SOCIETY MEETING



Professor H. L. Lantz, fruit breeder with the Iowa State College, is showing Henry Hohl one of the college's new varieties of apples—the Edgewood. Mr. Hohl has over 100 trees of the Iowa new variety topworked on Virginia Crab in his orchard near Donnellson, Lee County, Iowa.



At the annual meeting of the Iowa State Horticultural Society, at Ames, Iowa, November 12th and 13th, 1942, H. E. Nichols (center), extension horticulturist, is showing Henry Hohl of Donnellson (left) and H. L. Lantz of Ames the Sweepstakes plate of apples of the Little Mid-West Horticultural Exposition. This show is planned, managed and staged by the horticultural students of Iowa State College.



Poles used to prop limbs when laden with apples offer convenient hibernating places for codling moth larvae. In the orchard, pole piles are centers of moth infestation.

ORCHARD sanitation refers to various cleanup measures intended to aid in pest control. The sanitation practices are directed against insect stages not affected by spraying or against the insects found in places where sprays are not effective or are not practical.

During the past ten years, emphasis has been placed on scraping the loose bark from bearing trees to destroy hibernating larvae of the codling moth and to remove cocooning places for the worms emerging from the apples during the summer season. The scraping should be done during the winter months or early spring before the trees bloom. The loose bark from each tree should be collected on sheets or sacks placed under the trees and then burned, because burning is the only sure way to destroy all worms collected with the loose bark.

The number of codling moth larvae which cocoon under loose bark varies considerably, but on the average about 55 percent to 60 percent of the population on the tree can be expected. The loose bark in crotches and on the trunk are the most favored places, but loose bark anywhere on the tree can be a place of refuge for the worms. If removing the loose bark is followed up by banding the tree trunk and main limbs in June, you may catch as many as two-thirds or more of the larvae of the summer brood when they emerge from the apples. Corrugated paper bands treated with a chemical to kill the larvae are available and are preferable to untreated paper bands or bands made of burlap

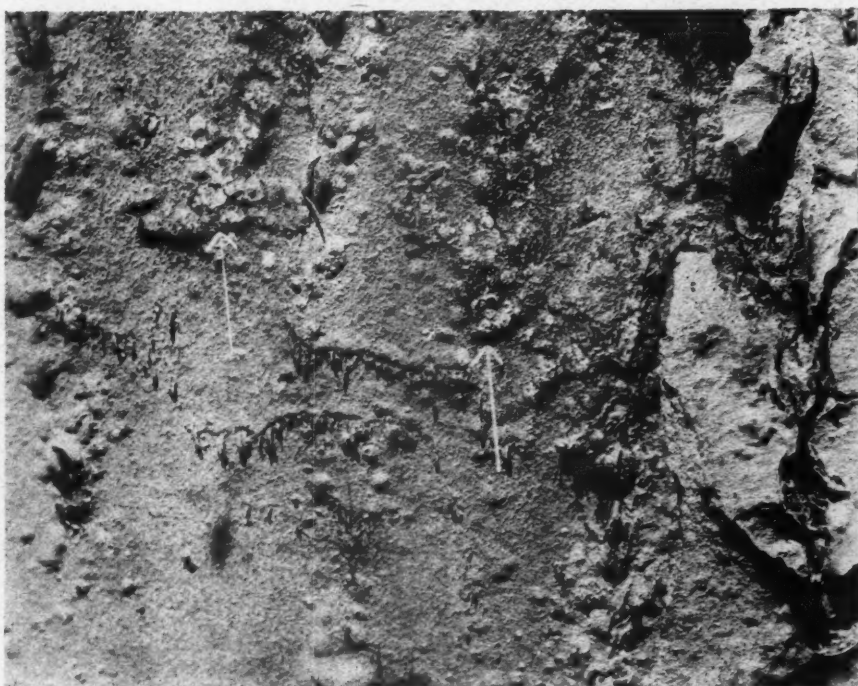
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ORCHARD SANITATION

FOR BETTER PRODUCTION TO MEET WAR NEEDS

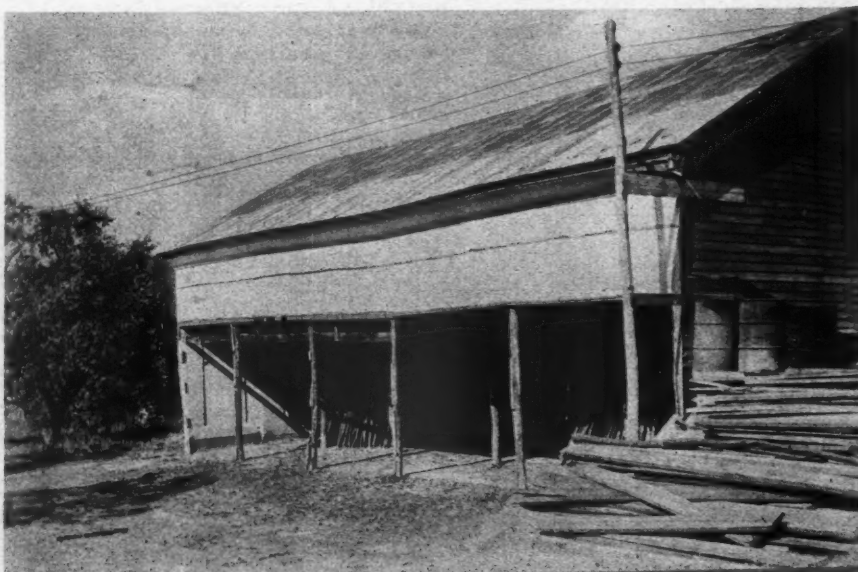
By W. S. HOUGH

Winchester Research Laboratory of the Virginia Agricultural Experiment Station



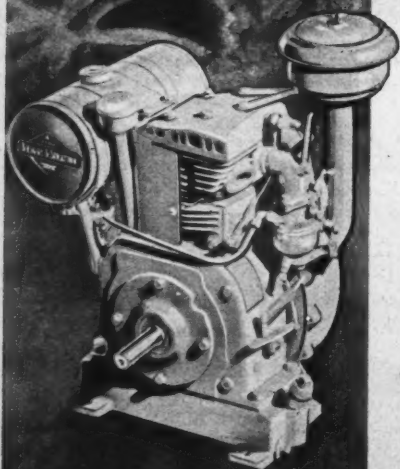
Scraping loose bark from the apple tree exposed the colonies of San Jose scale (indicated by arrows) which could not be contacted by sprays.

Storage of pole props in a shed lined with cloth sheeting prevents escape of the moths and thus eliminates infestation of nearby trees.



Best Fed Fighters IN THE WORLD

To keep our fighters "the best fed", our armed forces use the most modern mechanized kitchen equipment available. Here again Briggs & Stratton Motors are proving their value by furnishing dependable power for bread mixers, refrigerators, water supply, lighting plants and other gasoline-powered equipment.



Today, the entire facilities of the Briggs & Stratton Corp., are devoted to the war effort and approved civilian uses. Therefore, Briggs & Stratton, 4-cycle air-cooled motors, now in essential service, should be given every care to assure uninterrupted performance.

Most important in maintenance is the use of clean fuel, correct lubrication with the right grade of oil, changed at recommended intervals, and motor kept clean and properly adjusted. In any case of emergency, your dealer or nearest Briggs & Stratton Service Station will be glad to be of assistance.

BRIGGS & STRATTON CORP.
MILWAUKEE, WISCONSIN, U. S. A.



IN THE NEWS

CLAUDE R. WICKARD

Secretary of Agriculture Claude R. Wickard, who grew up on the farm and who believes food is as important as bullets in



CLAUDE R. WICKARD

winning a war, is now in complete charge of supplying the greatest food needs in American history.

He estimates that up to 25 per cent of the 1943 output of food will be required for lend-lease and the armed forces, and he takes over the marketing and distribution supervision formerly exercised by the War Production

Board. Wickard believes that "good food and plenty of it is one of the best missionaries for democracy."

He has already served notice that he will make every effort to raise next year's production allotment for farm machinery, which has been restricted by WPB to 20 per cent of the 1940 production, as against 80 per cent for 1942. Wickard wants 50 per cent of the 1940 output next year.

Although he receives no new title, President Roosevelt's order placed Wickard on an equal footing with WPB Chairman, Donald M. Nelson.

HARRY W. MILLER

Harry W. Miller, Sr., Paw Paw, W. Va., trained in fruit growing at his father's hands before the days of state and federal specialists. He has acquired "the hard way" what is probably the most complete knowledge of fruit growing possessed by any one man in the East. He wrestled first with peaches; had them wiped out en masse by "yellows"; replanted to apples, but never put all his eggs in one basket; grew plums and pears as well.



H. W. MILLER

Of late years his holdings have stabilized at around 700 acres with a top yield of 200,000 bushels, mostly sold under the famous "Mountaineer" brand.

C. PURCELL McCUE

Since the formation in 1936 of the Appalachian Apple Service, Inc., C. Purcell McCue, Greenwood, Va., has been its president.



C. PURCELL McCUE

Mr. McCue is a large grower who through his model packing house, acts as a kind of clearing house for the apples of a number of his neighbors. Yet he still finds time to serve his native heath, the famous Albemarle County of Virginia, as one of its County Commissioners and is on a half dozen other such bodies of the government, church

and industry.

In short, he is the kind of man to whom his neighbors turn whenever there is a community job to be done.

WOOLFOLK CHEMICAL WORKS, LTD.

Directs the attention of Efficiency-Minded Peach Growers to Its All-Purpose Growing-Period Spray!

PAN PEACH SPRAY

has been the choice of leading commercial orchardists since 1930.

The essential ingredients of a balanced peach spray are NUTONEX Sulphur, Lead Arsenate, Basic Sulphate of Zinc. Their combination is PAN PEACH SPRAY, a chemically and physically stable mixture that does not deteriorate, cake or harden. In using, there is no bother about mixing up necessary ingredients, and no worry about probable waste or wrong proportions that may result from incompetent help.

SAVES LABOR

Used at the rate of 8 lbs. to 50 gallons of water, it is conveniently packed in cases of 4-8 lb. bags, 2-16 lb. bags, and 4-16 lb. bags.

Write for full information.

**WOOLFOLK
CHEMICAL WORKS, Ltd.**

Office and Plant
Fort Valley, Georgia

MANUFACTURERS



FARM AND ORCHARD CHEMICALS



How to make your SPRAY MATERIALS GO FARTHER FOR BIGGER, BETTER FRUIT AND TO AID THE NATIONAL ECONOMY

IT'S PATRIOTIC TO MAKE THE MOST EFFICIENT USE OF YOUR SPRAY MATERIALS

A Victory Spray Program Will Mean . . .

- ★ Actual Savings to You
- ★ Better Quality, Fewer Culls
- ★ Enough Materials for Everyone

With the country calling for greater farm production, fruit growers everywhere must undertake to grow bigger, better fruit crops by means of more efficient orchard operations. This means, among other things, that every grower should plan his insect and fungous disease control program with the greatest possible care and foresight in order to make his supply of spray materials go farther, thus contributing in a practical way to the national economy.

Under war emergency conditions it will not be patriotic to waste spray materials during the coming season. Even with restrictions there can be enough spray material to go around

if fruit growers will plan wisely and spray efficiently. The use of the right materials, or a combination of materials, applied at the proper time will give you a Victory spray program which will mean, (1) enough spray materials for everyone, (2) increased crop production, (3) better quality fruit and fewer culls.

Sherwin-Williams is now producing a complete line of insecticides and fungicides for fruit growers in sufficient quantities to take care of our customers if they will place their orders at once through their regular dealers and take delivery as soon as we can ship.

Write For FREE Victory Spray Schedules

We will gladly give you advice and suggestions on planning a Victory spray program, together with folders describing S-W spraying and dusting materials which will give maximum results at minimum cost, if you will write at once to the Insecticide Department, The Sherwin-Williams Company, Cleveland, Ohio.

THESE PROVEN

AN ARSENATE OF LEAD THAT GIVES HEAVIEST DEPOSIT

A Victory spray program calls for the use of a strong pure Arsenate of Lead, such as that produced by Sherwin-Williams. The proven S-W Arsenate of Lead is 98% pure Arsenate of Lead, which is 2% higher in content than most other Arsenate of Lead. S-W Arsenate of Lead contains at least 30% arsenious oxide and the least amount of water soluble arsenic, which results in maximum control of codling moth. S-W Arsenate of Lead does not contain a defoliant or flocculating agent because the addition of these would reduce efficiency by reducing the deposit on spray fruit. The heaviest deposit is produced by Sherwin-Williams Arsenate of Lead.

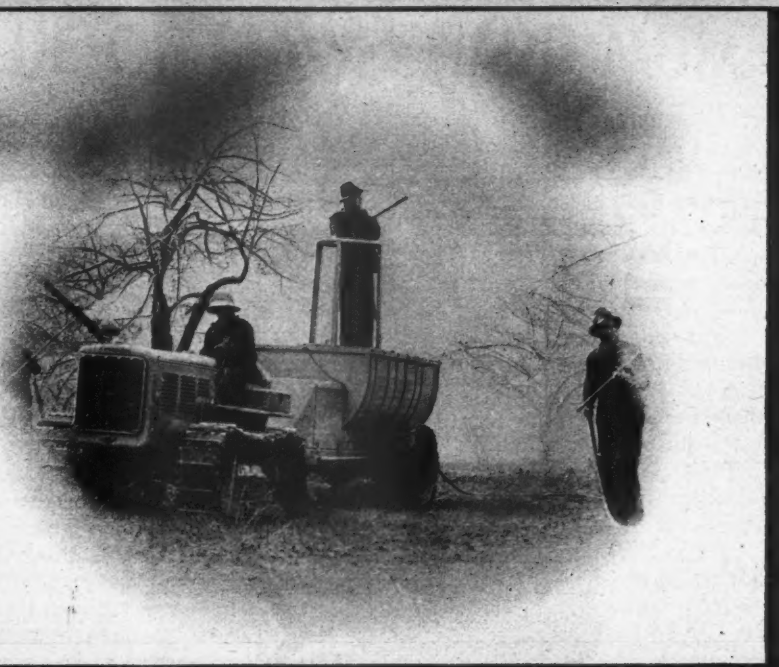
SAVE DRUMS, AID WAR EFFORT WITH DRY LIME SULFUR

Use S-W Dry Lime Sulfur next season for fine color and smoother finish of fruit and also because of the saving of metal drums and tank cars for Liquid Lime Sulfur. Remember, too, that the 70% water content of Liquid Lime Sulfur is a big—and unnecessary—burden on rail and other transportation facilities in getting needed spray materials to you. In using S-W Dry Lime Sulfur (The Original) you will be aiding the national economy by growing more "Grade A" apples, free of russet and scab. You will also be protecting your trees from foliage "burn" and from the stunted foliage, commonly caused by the use of caustic Liquid Lime Sulfur.

Other Products for Victory Spray Program

3-W MULSOID SULFUR	S-W SULFIX SULFUR
S-W FREE-MULSION	S-W SUMMER MULSION
S-W BASIC-COP (TRI-BASIC COPPER SULFATE)	

GO FARTHER FRUIT CROPS NATIONAL ECONOMY



ROEN PRODUCTS ARE READY TO HELP

A SPREADER AND DEPOSIT BUILDER WITH OVICIDAL VALUE

The uniform and heavy deposit resulting from the use of S-W Spralastic will make the Arsenate of Lead you are using much more effective in the control of codling moth. Its use actually causes three to four times more Arsenate of Lead to remain on the fruit by increasing the adhesive and spreading properties of the Arsenate of Lead particles and eliminating wasteful run-off. S-W Spralastic deposits a uniform heavy coating of Arsenate of Lead on the apples yet one that is easily removed in the washing process. You should use Spralastic, the most efficient spreader ever developed.

SAFE-N-LEAD FOR REDUCING ARSENICAL INJURY TO FOLIAGE

The maintenance, throughout the growing season, of healthy, vigorous foliage is of first importance in a Victory spray program designed to produce fine quality and high yield. Extensive field tests have shown that S-W Safe-N-Lead completely neutralizes the water soluble arsenic found in arsenates of lead. When added to Arsenate of Lead in the spray tank, S-W Safe-N-Lead converts the water soluble arsenic into a stable compound which will not "burn" apple foliage, but stimulates the growth of healthy, green leaves. Contrary to long established belief HYDRATED LIME does not prevent arsenical injury to apple foliage, but actually reduces the insecticidal value of Arsenate of Lead, as well as being detrimental to apple growth.

DINITROL KILLS APHIS EGGS, SAVES ON NICOTINE SPRAYS

The use of S-W Dinitrol is important in the Victory spray program because it kills the eggs of Rosy Aphis and Early Green Apple Aphis in the dormant period. Thus it is cheaper to use Dinitrol against aphids than to spray during the growing season with Nicotine Sulfate. S-W Dinitrol is a dry powder containing dinitro-ortho-cresol and is recommended for use with all properly made oil emulsions. The use of Dinitrol is especially important under present conditions because its use conserves nicotine which is vitally needed by the country for another purpose.

**ORDER
SPRAY MATERIALS
EARLY!**
TAKE DELIVERY NOW
TO AVOID DELAYS IN
SHIPPING OR BOTTLENECK
CAUSED BY SPRING RUSH



THE SHERWIN-WILLIAMS Co.

RESOLUTION FOR AMERICA



This year the tide of war must turn.

This year, all over the world, America fights.

Our farms and factories must produce as never before.

There must be food in quantity—and ships, planes, tanks and guns in numbers to outmatch the world.

And all these things must get to where they're needed—swiftly, on time, without fail or falter.

The railroads have a part in that job—a big part.

They accept it.

They could do with more engines, more cars, more everything when materials can be spared for them.

Until then and after, railroads and railroad men will continue to work as they never worked before to get the big job done.

The guiding rule of our lives—and of yours—must be *right of way for the U. S. A.*

"It is now estimated that the railroads are moving well over a million troops a month. This is war movement, and must come first . . . Pleasure travelers crowding into passenger train seats may easily deprive a soldier or an essential traveler, who must board a train at the last minute, of necessary accommodations."

**JOSEPH B. EASTMAN, Director
Office of Defense Transportation**

Association of
AMERICAN



RAILROADS
Washington D. C.

AMERICAN FRUIT GROWER

LEAD TOLERANCE

(Continued from page 9)

Health Service, the lead tolerance has been raised to .05 grains per pound. At the same time, the arsenic tolerance has been raised to .025 grains per pound, so that the two tolerances are now in the same proportion as the lead and arsenic in the residue on the apples. In this investigation, and in its recommendations, the Public Health Service took into consideration "the extent to which the use of such substance" (lead arsenate) "is required or cannot be avoided . . . and the other ways in which the consumer may be affected;" this, it will be noted, is exactly what the federal law regarding tolerances requires. Horticulturists and entomologists familiar with this problem agree that it would have been a disaster to the industry to lower the tolerances below the points reached in 1935; in fact, in important apple-growing regions even the 1935 tolerances could be met only at the cost of excessive injury to the fruit resulting from washing.

According to recent correspondence with authorities in various parts of the country, it can be concluded that the recent raises have been as beneficial to the apple industry as reductions would have been harmful. The effects vary with the locality. In New England and Michigan, where the control of late broods of codling moth is, comparatively speaking, a minor problem, it has been possible and commercially successful to adjust schedules to meet the present tolerances without washing; injury to tender northern varieties, like the McIntosh, is thereby avoided.

In the eastern part of the United States the necessity for residue removal becomes progressively greater as one goes south, because of the increasing necessity for later and later lead arsenate sprays for the control of codling moth. In the East and Middle West, the latitude along which it generally becomes an impossibility to control codling moth without washing appears to be approximately the 39th parallel; there are exceptions to this rule, depending, for example, upon elevation and the previous history of codling moth control in the individual orchard. Horticulturists and entomologists in Indiana and Illinois are agreed, on the basis of evidence secured in both states, that fall and winter varieties cannot be sprayed with lead arsenate, at concentrations of 4 pounds per 100 gallons, after the third or fourth first-brood cover spray without exceeding the present tolerances; the last of these sprays, if the tolerances are not to be exceeded, must be applied not later than 30 days after bloom.

The washing solution is 1 to 1½
(Continued on page 37)

THE FERTILIZER VALUE OF AN ORCHARD MULCH

(Continued from page 13)

been in progress at the Ohio Station for some time and the results are at least indicative of what may be expected under somewhat similar conditions.

Nitrogen—Since nitrogen has been the only chemical element added to many orchard soils and it has suddenly become the one most difficult to secure due to its need in war industries, its natural occurrence is of special interest. Under what systems of culture can it be obtained "free" or nearly so.

Certainly cultivation, especially when accompanied by the use of leguminous or cover crops, will provide nitrogen to such an extent that frequently no additional application is necessary. But tillage, especially on rolling land or where erosion occurs, has become less and less popular during recent years. This is more true of apples and pears than with stone fruits. But even with the latter, there is less intense cultivation.

Without further discussion of tillage at this time let us turn to the possibilities of obtaining nitrogen from a mulch. In the beginning the chief emphasis for mulching was placed on the conservation of moisture and as investigations continue it would appear that the case for water was not overstated. The maintenance of a favorable moisture supply during dry periods is of paramount importance in many areas. But as time goes on we learn that nitrates also accumulate under mulches even to the extent in some cases that too much nitrogen is available even where none has been applied as a fertilizer. This is far from universal but is striking in many cases. In Massachusetts, Shaw found from four to six times as many nitrates under mulch as in cultivation in some seasons. At Wooster the mulched trees always look somewhat greener and more vigorous than the cultivated ones and nitrates average higher. A legume mulch provides more nitrogen than straw and in some cases it is to be avoided for that reason.

In one orchard at Wooster half the cultivated trees were fertilized with nitrate of soda or sulfate of ammonia and half were untreated. The same was true of the mulched trees. The total production from the mulched and tilled trees was almost the same. The average yield of the mulched trees exceeded that for the tilled ones by 95.8 pounds. However, there was no consistent difference where nitrogen had been applied, which indicates that sufficient is made available from the mulch to supply the needs of the trees.

The matter of soil organic matter is

one of the principal considerations of soil scientists and the practicing agriculturist. It has always been considered about the top rung of the ladder, the key to soil fertility. Far be it from me to pull it down from its lofty perch other than to say it is much more difficult to increase the total amount in the soil than some of us had been led to believe.

Nevertheless, it is doubtless true to say that a soil is "rich" or "poor" pretty largely in proportion to the organic matter it contains. A soil may be productive, however, with an organic matter content far below the point of giving it a darkish color. It is the effort to push the organic matter content considerably above its native content that causes difficulty. Yet I was long taught that we might buy a piece of land that was low in this material and build it up by growing cover crops to plow into the land. I have seen this tried, many times. The results of such a practice are liable to be disappointing and expensive.

In the first place organic matter is not an inert, stable material that builds up like a "bank account," so that the more you put there the more you have. On the other hand, organic matter breaks down, decomposes, and some of its products may disappear as a gas into the air, or it may leak away in drainage water, and in the end little may be left.

Let us look at nature for a lesson. Where do we find the greatest accumulation of organic matter? Certainly not in the average cultivated field where crop residues and manure have been returned to the land. But rather in peat or muck land which was laid down under water. Next we are likely to find accumulations in forest litter and beneath bluegrass or other sods which have not been disturbed for long periods of time.

For instance, at the Pennsylvania Experiment Station, a set of field plots has been under differential treatments since 1881. Here the grass division strips which separate the plots have been in permanent grass since 1867. In 1922 (55 years) a study was made of the organic matter and nitrogen content of the sod soils and also the cultivated plot areas. On an average the untreated grass strip soils contained 79,327 pounds per acre of organic matter and 3,754 pounds of nitrogen compared to 63,028 pounds of organic matter and 2,936 pounds of nitrogen in the fertilized plot soils. The plot which has received a total of 123 tons of manure in addition to the crop residues (roots and stubble) contained 78,480 pounds per acre of organic matter in comparison with the adjacent grass strip which contained 90,745 pounds.

In our orchards at Wooster we

have measured the amount of organic matter in the soil which has been (a) in continuous mulch, (b) in sod, and (c) which has been in cultivation with cover crops since 1915. Under the conditions of these experiments, the organic matter content was about the same under mulch and sod, but it was much lower in the cultivated area, even though a winter and summer cover crop had been used for better than 20 years. We do not conclude that the higher value (about 4½%) under mulch is due entirely to the accumulation of material but rather that there has been a loss of the original content from tillage (1.8 to 2%).

This is a striking lesson to those who have long preached thorough cultivation.

Potash—In 1937 the question arose as to the amount of available potassium that might be found beneath old mulches, sod, and in tilled orchards. An investigation was started at that time which yielded some unexpected results. The first trees sampled were those in mulch which revealed that available potassium was quite high from 24 to 32 inches beneath the heavy mulch in two of our orchards. The entire cultivated area, as well as an unfertilized field plot, was notably low in available potassium. Intermediate to these extremes was the amount of available potassium present in the soil beneath the surface of the bluegrass sod near the heavily mulched trees. The soil beneath two of the trees in mulch had a content of approximately 1,000 pounds per acre of available potassium at a depth of 24 inches, while the soil beneath a tree 35 feet away in cultivation contained less than 175 pounds.

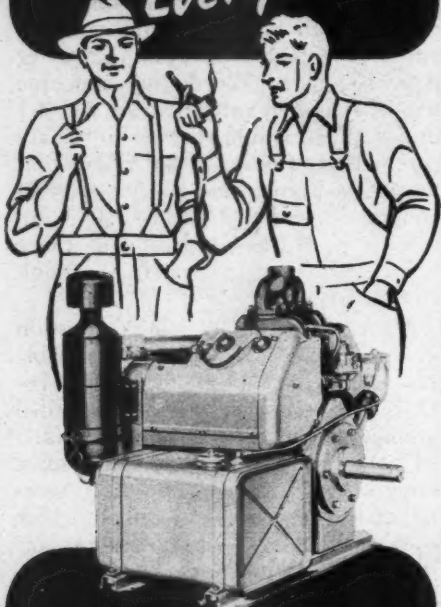
This would seem to suggest that perhaps no orchard would suffer from potash deficiency if it is kept in mulch regardless of the deficiency of this element in the soil. There could be no simpler way of supplying potash to trees than this because it seems to be mobile and distribute both downward and laterally which is more than can be said of a potash salt applied to the surface of the soil. At least this is true of the soils with which we have worked.

Since this element is receiving more and more attention and such trouble as leaf scorch continues to appear, the value of a mulch becomes more important. Mr. W. B. Farmer of New Hampshire has been using seaweed as a mulch which should solve these problems and be particularly high in potash. Others near the coast use swale hay and other native grasses at a low cost.

In addition to nitrogen and potassium, I. W. Wander, who has made

(Continued on page 27)

"Give me a
WISCONSIN
AIR-COOLED
ENGINE
Every Time!"



More and more fruit growers are switching to all-out preference for Wisconsin heavy-duty air-cooled engines. There's no room for argument once you have experienced the advantages of this type of power.

Not only does a Wisconsin air-cooled engine deliver the most horsepower per pound of engine weight (the 22 hp. 4-cylinder engine illustrated above weighs only 315 lbs., complete with side-mount fuel tank), but it's always ready to GO in any weather, at any season.

There are no "water chores" to bother with. Nothing to freeze in cold weather; no draining or re-filling of cooling system. No "running dry" in hot weather. Wisconsin Engines are made for satisfactory operation at temperatures up to 140°.

And right now, during this critical war emergency that all of us are in, Wisconsin Air-Cooled Engines represent valuable savings of vital materials needed for war production. A simple fan-and-flywheel casting takes the place of the many parts that comprise the cooling system of a water-cooled engine . . . parts that are subject to wear, repairs and replacement.

A limited quantity of Wisconsin-powered farm machinery will still be available this year . . . and perhaps it will be your good fortune to acquire some of this equipment. In the meantime, fill out and mail the coupon for more information.

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- ☐ Glad to have list of farm machine builders who use Wisconsin Air-Cooled Engines on their equipment.
- ☐ Send free literature and place my name on your mailing list.

Name _____

Address _____

ORCHARD SANITATION

(Continued from page 17)

or old sacks. The untreated bands and sacks must be examined at least once each 10 days through the season in order to remove and destroy the larvae which collected in them. If this is not done, the untreated bands merely afford a convenient place for the codling moth to survive.

Scraping loose bark from bearing apple trees above twenty years of age involves considerable labor. On the average, an hour is required for one man to clean a tree 30 years old. Some trees can be cleaned in fifteen minutes, and an old, rough tree will require several hours the first time that the tree has been gone over. If the tree has been thoroughly scraped once, the length of time required to clean the tree in succeeding years may be reduced as much as 75 percent to 90 percent. In fact, it is usually not necessary to go over the same tree more than once every two years. As far as codling moth control is concerned, scraping the loose bark from the trees is not justified unless the trees are also banded during the summer season.

Scraping loose bark from apple trees is often an important factor in getting satisfactory results with sprays intended to control scale insects. San Jose scale and its near relative, Forbes scale, are often found under loose bark. Sprays neither penetrate the bark nor run up under the bark coverage to contact the scales. We have never found a way to reach the scales resting under protection of pieces of bark, except by first removing the bark and then applying the spray. More than once have growers complained about the dormant or delayed dormant spray failing to eradicate San Jose scale when the spraying was thorough and the gallonage per tree was considerably above average, but the loose bark had not been scraped from the tree trunk and main limbs prior to spraying.

The question is frequently raised, "Should I gather up the drop apples and destroy them after the harvest season in the fall, if there is no market for them?" Wormy apples which drop to the ground in September and October frequently contain the live larvae when they drop. If these drops were gathered two or three times during the harvesting period, many worms could be removed from the orchard before they leave the fruit. On the other hand, if all of the drops remain on the ground until the end of the picking season in late October or early November, most of the larvae will have left the apples and there is no particular advantage in removing them from the orchard.

Collecting drops during the summer months is not justified, because nearly all of the summer brood larvae have left the apples before they drop or soon after they have dropped. No advantage appeared when drops were collected as often as once a week during the summer season.

The most practical method of disposing of wormy apples collected when thinning in June or July is to bury them under 12 inches of soil. Woodside in Virginia destroyed all of the worms in thinned apples by placing them in a shallow ditch, adding about one ounce of paradichlorobenzene crystals per bushel of apples and covering with six inches of soil.

Cleaning the ground under the trees of such coverage as grass and leaves is not important from the standpoint of codling moth control under eastern conditions. Very few larvae are able to survive the winter on the ground and emerge as moths in the spring. Predatory beetles and ants constitute an important control of the codling moth larvae which remain on the ground. Furthermore, raking up the fallen leaves or burning the ground cover has no practical effect on the control of apple scab. It is recognized, however, that breaking the ground by disking or harrowing around the tree disturbs the mice, and for this reason the practice is a good one, but it does not constitute adequate mouse control in many orchards.

In some orchard sections, poles are used as props to support the limbs when laden with fruit. Codling moth larvae over-winter in the cracks, knot holes, and under the bark on the poles. When the poles are stacked in or near the orchard, the apples nearest the pole piles are always injured by stings and worm entries more severely than elsewhere, except near the packing shed. Experience has demonstrated the value of storing the props in a shed which has been made moth tight by lining the walls and ceiling with cloth sheeting. If this cannot be done, it is advisable to stack the poles at least 1/4 to 1/2 mile from the orchard. Wrapping the pole piles with cloth sheeting or cheesecloth to prevent the moths from flying out in the spring is not as effective as one might suppose. In many instances, rabbits, skunks, and other animals tear holes in the bottom area. Sharp points on the poles sometimes pierce the upper part, and birds have been known to use some of the cloth for building nests.

FRUIT CAN HELP TO WIN THE WAR

(Continued from page 14)

Let me cite one sidelight on the part fruit plays in this war. When our troops recently occupied Algeria quantities of American grown oranges were put ashore along with other foodstuffs. American soldiers immediately won the hearts and friendship of the natives by passing out these oranges with a free hand. Although oranges are grown in Algeria the population had been deprived of them for a long time, because under German-Italian domination the Axis over-officers had seen to it that all oranges grown in that region were shipped to Germany.

Fruit is vital to our national economy, as well as to the military, because in this time of war emergency and production strain at home, fruit in its many forms is a necessary part of the daily diet of our people if their health and thus the health of the nation is to be maintained.

Let me repeat then, that the role of the commercial fruit grower in the Food-for-Freedom goal is of the utmost importance. While other farm specialists produce other types of food stuffs, the commercial fruit growers of this country must produce the amounts of fruits required by ourselves and our Allies. This for the very obvious reason that the general farmer no longer is a factor in producing fruit.

Insects, blights and orchard diseases have driven the farmer out of fruit growing, with the result that the commercial orchard today produces 5/6 of all fruit grown in this country.

This trend toward the commercial fruit farm and away from the farm orchard is shown in recently released U. S. census figures.

The 1940 census figures reveal that in the last 10 years more than a million acres in fruit—1,041,225 acres, to be exact—were abandoned by farmers as unprofitable or interfering with other farm work. Here are the actual census figures:

Acreage in fruit in 1930—6,086,176

Acreage in fruit in 1940—5,044,951

Loss—1,041,225 Acres.

At first reading these figures might indicate a serious blow at our national food economy, but this is actually not the case. In this same 10 year period covered by the census figures production from commercial fruit farms has replaced the fruit acreage abandoned on general farms. Although tens of thousands of farms gave up fruit growing in the last decade, yet during this 10 years fruit production has steadily increased. The following production per tree of the farm orchard as compared with commercial fruit farms tells why:

(Continued on page 27)



Tested for Years TO ADD YEARS TO TRUCK LIFE

Joseph B. Eastman, director of the Office of Defense Transportation, has taken the stand that highway transportation is absolutely essential to the winning of the war. GMC is co-operating with the ODT to conserve the life and operating efficiency of America's trucks. General Motors Truck dealers have had years of experience in perfecting Preventive Maintenance . . . the best known service procedure for getting the most miles from truck equipment. As a result, GMC's wartime service program, called "Victory Maintenance," is especially qualified to keep your trucks *pulling for Victory*.

Special "Service Payment Plan"
Through Our Own YMAC



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★ NATIONWIDE NEWS ★

(Continued from page 7)

Crops and livestock are divided into essential and non-essential groups and each essential crop or livestock is given a war unit rating. Following are the ratings:

Fruit trees, 1 acre; blackberries, cranberries, dewberries, raspberries, strawberries, blueberries, currants, gooseberries and quince, .7 acre; sugar beets, 2 acres; sugar cane, 1 acre, nuts, 5 acres.

Farm beef herds, 12; feed-lot beef, 20; range beef, 15; stocker beef run on grass, 75; hogs, 20; milk cows, 1; farm sheep, 30; lambs in feedlot, 160; range sheep, 40.

Fiber and oil crops—American-Egyptian long-staple cotton, 2.5 acres; peanuts, Irish potatoes and sweet potatoes, 2 acres.

Field crops—barley, wheat, grain sorghums, oats, rye, dry field peas, cover crop seeds, hay and hay crop seeds, 15 acres; corn, dry edible beans, rice, broomcorn, green peas and sweet corn, 5 acres.

Truck and canning crops—broccoli, brussel sprouts, collards, endive, kale, tomatoes, carrots, chard escarole, mustard greens, spinach, turnip greens, onions, snap beans, green leafy lettuce, lima beans, green peppers, turnips, asparagus, cauliflower, cabbage, 1 acre.

★
CANADIAN apple imports have been cut to 200,000 boxes by a modification of the understanding reached between Canada and the United States limiting the movement of British Columbia apples into the United States during the 1942-43 season. Under the new arrangement, the total seasonal movement has been cut from 800,000 boxes to 600,000.

★
ANOTHER call for scrap has come from the War Production Board. The recent salvage drive has been a great success but most of the iron and steel collected was of the light household variety. The need now is for heavy scrap to mix with the enormous supply of light scrap.

Since farm work at this time of year is at a low level, the WPB urges farmers to turn in all scrap, preferably the heavy type. Stating that the farm is one of the most prolific sources of heavy scrap, the WPB wants the aid of every farmer in rounding up all available scrap—TODAY!

★
ARE fruit growers doing their share in the war? A bulletin of the Appalachian Apple Service points out that wheat growers average 20

bushels per acre or about 1200 pounds of food per acre. The corn farmer produces 45 bushels or approximately 2500 pounds per acre. The apple growers average 300 bushels per acre or 13,000 pounds per acre of essential food, more than four times as much as the wheat grower.

★
THE Department of Agriculture reports that many furnaces burn wood more efficiently without a grate and families considering wood for furnace fuel because of the uncertainty of coal or oil supply may not need a new grate. Removal of the grate may be advisable to provide sufficient combustion space which should be two-thirds greater for firing with wood.

★
TRUCK and car owners will be interested to know that there is no battery shortage and no reason to expect that batteries will not continue to be produced in sufficient quantities to keep the cars of the country on the road. Under gasoline rationing, the average car will not be driven enough to keep the battery charged and frequent inspections and recharging will be necessary.

★
APPROXIMATELY one-half of the estimated 1943 pack of canned fruits, vegetables, and juices will be reserved for use by the armed forces or Lend-Lease. The percentages are based on the amount packed in 1942 and range from 19 per cent of the grapefruit pack to 100 per cent of the blueberry, fig and blended fruit juice pack. Sixty-three per cent of canned apples, 41 per cent of the applesauce, 63 per cent of the peaches, and 65 per cent of the pears will be reserved.

★
THE one-delivery-a-day proviso of General Order ODT No. 17 applicable to the hauling of fresh fruits and vegetables from rail, water and other terminals to jobbers' warehouses, and from terminals and warehouse to the stores of large buyers in full truck loads, was knocked out by General Permit No. 19 issued by the Office of Defense Transportation on December 22.

Notwithstanding provisions of the original order, the Special Permit provides that "any motor carrier operating a motor vehicle in local delivery service and engaged exclusively in the transportation and delivery of fresh fruits and vegetables

may (1) make more than one delivery in any calendar day between any rail, water, air or motor terminal and any wholesale produce market."

The Special Permit goes further by saying the motor carrier may (2) "make more than one delivery during any calendar day between any . . . terminal or any wholesale produce market . . . and the premises of any consignee at one point of destination . . . provided, however, that each such delivery . . . constitutes a capacity load of the largest motor truck of the type ordinarily used by such carrier in making deliveries."

This revision of ODT No. 17 to take care of multiple hauling between team tracks and jobbers' stores, between team tracks and large buyers' places of business, and between jobbers' warehouses and their mass buyers' stores, does not affect in any way the prohibition against second deliveries of partial loads to a single destination, call-backs, pick-ups and other minor repetitions of daily service to the same customer.

STATE NEWS

(Continued from page 16)

Delicious, exhibited by White Bros., of Bangor brought \$46.

One of the highlights of the session was the presence of Dr. Harry J. Eustace, vice-president of Agricultural Trade Relations, Inc., San Francisco, California. Dr. Eustace formerly was head of the horticulture department at Michigan State College.—T. C. Stebbins, Ext. Hort. Specialist.

INDIANA—Much of Indiana is blanketed with snow, reminding the older growers of December, 1917, which ushered in one of those record winters. With Indiana's peach industry having been rebuilt to a great extent since the heavy loss of trees six years ago, the growers are hoping that present zero temperatures are not the forerunners of bud killing temperatures. Both peach and apple orchards carry excellent bud crop at the present time.

Recent surveys indicate that a total of about 75,000 bushels of apples dropped in October in Indiana orchards as a result of labor shortage. In many orchards harvest sprays delayed dropping sufficiently to allow the crop to be harvested without serious loss.

Anticipating a labor shortage in 1943 many Indiana growers are pruning more heavily this winter. Pruning is time consuming but labor saving in the end. Well pruned trees are more easily sprayed. Pruning increases the effectiveness of the fruit thinning which will be accomplished with the short labor supply in 1943 and may reduce total amount of thinning necessary. Many growers recognize the further fact that they must provide year round work if they are to hold their efficient help, and this essential operation—pruning—provides the winter work.—Monroe McCown, Sec'y, Lafayette.

MINNESOTA—A. J. Johnston of Duluth was elected president of the Head of the Lakes Fruit Growers association to direct the organization during the 1943 crop season. Other new officers elected were Miss Mildred Carsten, vice-president, and Mrs. D. T. Irvine, secretary. John Larson was re-elected treasurer. Other members of the new board of directors are Charles Nash, Charles Becklund, C. H. Appleby, William Pasek, and Francis Cox.—J. D. Winter, Sec'y, Mound.

FRUIT CAN HELP TO WIN THE WAR

(Continued from page 25)

Production per tree on farms less than 100 trees (Farms)—1.8 bu.

Production per tree on farms of 1,000 trees and over (Fruit Farms)—3.6 bu.

Bearing apple trees in 1930—88,848,970 yielding 126,433,057 bu.

Bearing apple trees in 1940—58,152,108 yielding 150,236,768 bu.

The outstanding importance of America's commercial fruit farms in the production of fruit for the nation's nutrition and health is also established by other figures garnered in the 1940 census. Thus, an analysis of Fruit Farm income by the Census Bureau reveals that less than 2% of income is received from other sources than fruit. The 1940 Fruit Farm income is shown to be as follows:

From Fruit	\$300,975,952
From Livestock	5,311,450
From Dairy	4,946,357
From Poultry	5,018,372
From Vegetables	6,249,077

Taken all together, the appeal of the Food-for-Freedom program, the nutritional importance of fruit in the daily diet of our military and our civilian populations, and the abandonment of fruit growing on general farms as revealed by the recent census, makes just one fact clear, and that is that because the responsibility for fruit production rests squarely upon his shoulders, the commercial fruit grower *can* and *must* help win the war.

ORCHARD MULCH

(Continued from page 23)

these determinations, has found that all elements investigated except manganese and lead have been increased in the soil beneath a heavy mulch as compared with adjacent land under cultivation.

Calcium was much higher in the surface three inches of the soil investigated, being 50 per cent higher in one case and 38 in another. Since there are so many surface feeding roots beneath a mulch, this addition of available calcium is significant.

Magnesium was much higher in the surface nine inches and the reverse was true at the lower levels.

Phosphorus was greatly increased in the surface nine inches but not below that level. In the surface three inches, readily available phosphorus was 600 per cent higher than in the tilled soil adjacent.

Boron was 50 per cent higher under mulch in the surface nine inches but not affected below that level.



Potash— a MAJOR in the FOOD FRONT

Long recognized as one of the three essential plant foods, potash has moved up to the front line in America's food front. Years of official experimental work have clearly demonstrated that ample supplies and reserves of potash must be available in the soil to insure large yields of good quality crops.

Such production is now vitally important to maintain our armed as well as civilian forces. The American Potash Industry has been developed, expanded, and is now geared to take the place demanded of it by the National emergency.

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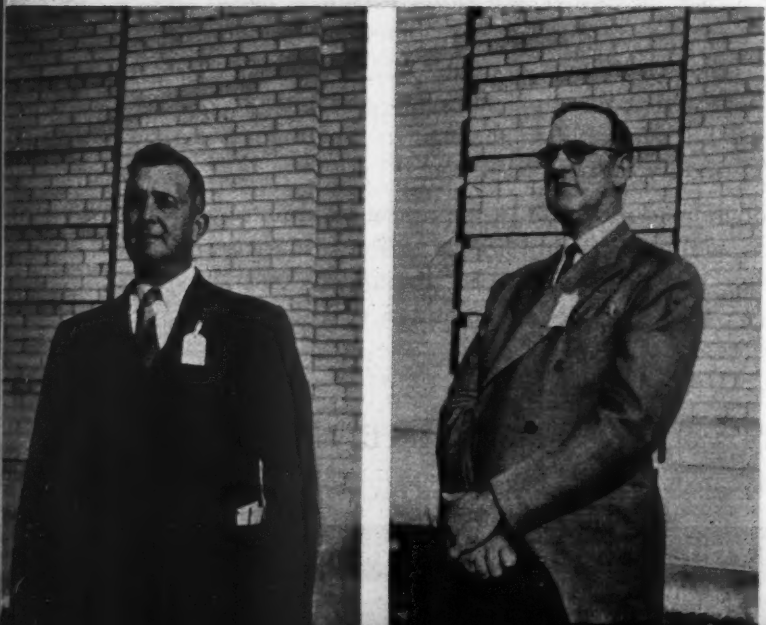
H. B. Buell, fruit grower of Eastford, is shown here receiving from Prof. S. P. Hollister, University of Connecticut the Certificate of Distinction (highest award of the Connecticut Pomological Society.)



The four out-of-state speakers at the meeting: Left to right: Prof. W. D. Whitcomb of Massachusetts Experiment Station at Waltham, Dr. H. B. Tukey, New York Experiment Station at Geneva, Dr. R. A. VanMeter of the Massachusetts State College at Amherst and Prof. C. O. Dunbar, Pa. Agri. Exp. Sta.



Honorary recognition certificates of the Wisconsin Society were presented this year to Arthur J. Schultz of Ripon, and Dr. Ray H. Roberts of Madison, who is shown here.



Mr. Arno Meyer, (outside left) proprietor of Waldo Orchards, Waldo, was elected president at the 74th annual convention of the Wisconsin Society meeting.

Don Reynolds, (left) well known orchardist of Sturgeon Bay, associated with the Reynolds Preserving Company was elected vice president at Wisconsin meeting.



The election of officers included: president, C. H. Gowdy of Greenwich; vice president, E. J. Graham of Norwich; secretary, H. C. C. Miles of Milford; and treasurer, S. L. Root of Farmington.

CAMERA

AT ANNUAL MEETING OF THE CONNECTICUT POMOLOGICAL SOCIETY

ENTHUSIASM was shown by the 150 fruit growers who attended the annual meeting of the Connecticut Pomological Society, December 8 and 9. The keynote of the meeting was war-time problems of the growers. Although fruit farm labor appeared to be the chief problem, growers were interested in production practices as discussed by the guest speakers. From the discussions it was apparent that fruit growers were most concerned about the labor shortage and the fruit package situation.—H. A. Rollins, Extension Fruit Specialist.

WISCONSIN STATE HORTICULTURAL SOCIETY ANNUAL MEETING

THE 74th annual convention of the Wisconsin State Horticultural Society was one of the most successful in the Society's history. Total registrations were over 170. The attendance the first day was larger than on the second. Both the fruit growers and the auxiliary meetings were most interesting and educational.

The splendid cooperation of the Jefferson County Fruit Growers Association, the county agricultural agent, Mr. George Wright, and the home demonstration agent, Mrs. Helen Feind, will long be remembered.—H. J. Rahmlow, Sec'y, Madison.

FERTILIZER SITUATION

(Continued from page 11)

Similar detailed analyses for peaches have not been made. A conservative estimate of the requirement per tree for peaches would be one-half the amount estimated above for apples.

Where legume crops are grown and incorporated into the soil the amount of nitrogen that they add will vary directly with the total weight of the crop turned under. These crops are normally turned down while quite succulent and before they develop to maximum tonnage. This is necessary to avoid undue competition with the trees, particularly for moisture. A fairly heavy legume crop would normally contain not over 1,000 pounds of legume dry matter per acre. Such a crop, when decomposed, would release from 20 to 30 pounds of nitrogen per acre, which would be approximately half of the orchard requirement. It should be emphasized that the tendency is to over-estimate the amount of dry matter contained in such a crop. Where the crop is a mixture of legumes and other types of growth only the legume portion is adding nitrogen to the total supply in the orchard as the other types of growth are simply returning to the soil nitrogen absorbed from it.

In order to obtain maximum growth of cover crops it is essential in many areas that the cover crop be well fertilized. Where legumes are being grown this fertilizer should be relatively high in phosphoric acid. Lime will be essential to satisfactory cover crop growth on acid soils. If, by the use of lime and phosphoric acid or other soil treatment, a legume cover crop is produced and incorporated in the soil, the requirement for mineral nitrogen can be reduced but such cover crop will not entirely eliminate the need for mineral nitrogen if maximum production in the orchard is to be maintained.

The greatest demand of the apple tree for nitrogen is at the start of growth in early spring. At that time the rapidly expanding leaves are very rich in nitrogen as are also the expanding flowers and young fruits. This nitrogen is largely drawn from the reserves stored up in the tree. Nitrogen applied in the spring is available to only a limited extent for growth during the early part of the season in which it is applied. Orchards that have become weak because of limited supplies of nitrogen generally do not push into vigorous growth during the first season after nitrogen is applied. Usually at least two or three years are necessary to get them back into a vigorous growth condition. Experiments have shown that the nitrogen applied in the early

(Continued on page 34)

**This Year's Crop Must Be Protected . . .
Because Food Is Vital to Victory!**

IT has been said over and over, "Food Will Win the War!" And because America shoulders the responsibility of feeding—not only our own fighters and workers—but the fighters and workers of our courageous allies—food production is literally war production!

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GOOD FOOD, HEALTHFUL LONGEVITY AND VICTORY

By JONATHAN FORMAN, A.B., M.D.

THE American medical profession has produced the healthiest people of all time by the control of: infectious diseases and the increase in our knowledge of infant feeding. These successes have increased our life expectancy to 63.8 years, creating at the same time the problems of old age and social security. These problems cannot be solved by increasing the burden of youth. Our old people must remain productive, clear of mind, and agile of body. Then their presence will be a blessing instead of a curse. The longer they can live and contribute to society the better for it and for them. If we would only put into practice what is known today about human nutrition, we could add ten productive years to the average life and conquer many of the so-called degenerative diseases which now are the common causes of death after middle life. In other words, our old people would wear out and not be taken by disease.

The principle involved with healthful longevity can easily be stated. We must keep the essential vitamins and minerals in our foods; we must eat moderately and not wear out our bodies burning up sugars, fats and proteins we never needed. Overeating cannot be avoided if Nature is driving us to eat everything in sight in the hope we shall get some essential accessory food which we are needing so much.

Eat Yellow and Green Foods

The yellow in foodstuffs is one of these essential elements. In every green thing there is a yellow component. The greener or the yellower a foodstuff is the more of this important substance it contains. This substance protects our eyesight. It also keeps intact our skin, our nose, and the lining of all our body cavities. It promotes reproduction of the race by making a good bed for the newly fertilized egg and protects us from the hazards of night blindness.

This yellow substance is found in the green leafy vegetables, carrots, sweet potatoes, squash, apricots, peaches, prunes, cherries, persimmons, butter, cheese, egg yolks, the liver of all animals, and especially in the oils from the livers of fish.

Eat Whole Grain Cereals

The next important item is the

JONATHAN FORMAN, A.B., M.D., is editor of the Ohio State Medical Journal and a representative of the Ohio Physicians of the Ohio State Committee on Nutrition for Defense, Columbus, Ohio.—Editors.

whole grain of the cereals. By cereals, of course, we mean the seeds of our grains. This means that you should have a whole grain cereal for breakfast and six slices of 100 percent whole wheat, pumpernickel bread and 100 percent pure rye bread during the day. This is a group of vitamins we're talking about rather than a single one but they all come in the same package in the berries of grains. They are also found in the meat of animals who have been fed on the grains, and in soy beans, green peas, and lima beans.

When there is a shortage of this group of vitamins there is a loss of appetite, nausea, a feeling of heaviness in the stomach, abdominal pain, constipation, abnormal dilatation of the heart, a disturbance in the ability to use starches and sugars, macerated areas at the angle of the mouth, excessively red lips, deeply swollen red tongue, graying of the hair, oily scaliness of the skin, especially around nose, ears and backs of the hands. If neglected there follows an inflammation of the skin especially on the back of the hands, burning areas of tenderness in the skin involved; long before this there is loss of weight, weakness, insomnia, nervousness, irritability, forgetfulness, mental depression and neuritis, and, if it goes too far, insanity.

And more important in these war days is, that moderate shortage of these substances makes us tire altogether too easily, and fight with our fellows on the slightest provocation.

The Fruit Juice Vitamin

"An apple a day keeps the doctor away." Not to go into detail, there is a vital, essential substance in fruit juices. This substance furnishes defense in our blood stream and tissue. It works against infections and keeps the gums around our teeth firm and healthy. It is only when there is a shortage of this material that gums recede, become spongy and bleed, and pyorrhea sets in. Of course, teeth decay depends upon many factors such as mechanical injury, the presence of bacteria which converts sugars into

corrosive acids, the lack of lime and a shortage of the Sunshine Vitamin.

All the other vitamins are bound up with these three which we have just described. So if you get these you will have all that you need of the others. All of them are to be purchased from your grocer, better still, whenever possible, picked fresh from the garden or orchard.

There is just one more vitamin for us to consider and most of us do have to purchase this one at the drug store, i.e., the Sunshine Vitamin. All the others are to be had from the farm or the grocery. Vitamin concentrates in pills, drops, and capsules are not for healthy people. They are intended to help the physician to treat those sick people who, because of disease, must be on a restricted diet, or who, because of disease, are not able to absorb vitamins from the foods, which they have eaten.

For the Sunshine Vitamin, Nature has provided us with a factory in our own bodies. If our skin be exposed to sunshine, it will manufacture all of this vitamin which we may need. Here in Ohio the amount of sunshine is low. Then, too, most of us city dwellers are kept at our work during the sunny hours of the day and to make matters worse many live in towns and cities covered with smog of soft coal smoke many months in the year. So we must turn to fish oils for our sunshine vitamin. Since there may well be important items which can be lost in concentrative processes, I prefer to take the natural oils.

We now know that visual acuity, mental and physical health, morale and endurance may be impaired by nutritional deficiencies. It is imperative now that our workers be well fed in order that they may increase their output and reduce the number of accidents. For reasons of morale it is just as important that all of our people get enough to eat of good meats, vegetables, and FRUITS.

AN APPLE, A BOOK AND AN EASY CHAIR

An apple, a book and an easy chair
By the side of an open fire
Whose flaming light brings warmth
and cheer

What more could a man desire?

How sweet in the evening when the
day's at an end,
Just to while the hours away
With an apple, a book and a loving
friend
'Tis the end of a perfect day!

Oh! Why should we ever be restless
or sad
When pleasures like these are given?
For an apple, a book and an easy
chair
Brings a feeling akin to heaven.

By Carolee Stark.

MORE FARM SCRAP NEEDED

THE need for metal scrap remains unabated, as the Nation's mighty steel industry, with production figures reaching astronomical proportions, enters the second year of the war.

Indeed, it can be said that the length, if not the outcome, of our struggle with the Axis powers hinges, to a very large extent, upon our ability to supply scrap iron and steel in sufficient quantities to keep our steel mills operating at full capacity.

The demand for steel in this war far exceeds that of any previous war. In World War I, it required ninety pounds of steel for every American soldier. In this war every man in Uncle Sam's armed forces must be backed by 4,900 pounds of steel. Multiply that figure by ten million (the number of men we expect to have under arms before the war is over), then add the tonnage of metal that is being used to produce warships, cargo vessels, shipyards, war plants, machine tools, etc., and you have a fair idea of what steel means in modern warfare. Without an adequate supply of steel no nation has a chance of survival, the way wars are fought today.

At the beginning of 1942, the annual capacity of our steel industry was approximately 88½ million tons, but the planned steel expansion program will provide for an additional yearly production capacity of ten million tons of steel by the middle of 1943. This means that the demand for scrap is increasing.

Steel is normally made up by melting together:

1. Pig iron (about 50%)
2. Scrap generated in the steel mill in the process of steelmaking (about 25%)
3. Scrap purchased from outside sources (about 25%)

Every ton of scrap takes the place of one ton of pig iron. To make one ton of pig iron requires 2 tons of iron ore; 1.2 tons of coal; and a half-ton of limestone. To produce 90 million tons of steel entirely from pig iron, without scrap, would require:

180,000,000 tons of iron ore
108,000,000 tons of coal, and
45,000,000 tons of limestone

There simply are not enough mining, transportation, and blast furnace facilities to supply and handle this huge tonnage. The deficiency must, therefore, be supplied with scrap.

Recent scrap drives have brought forth an abundance of light household scrap, but not enough heavy scrap. Light scrap in its original state, cannot be used economically in an open-hearth furnace. First, because it is so light it would burn up like paper; and secondly, because the weight is too small and the bulk too great to charge the furnace to capacity. Heavy scrap is, therefore, needed to mix with the light scrap.

American Industry and American Farms are our most prolific sources of heavy scrap. Industry provides most of the heavy scrap, but not enough, leaving a large tonnage to be supplied by the Nation's farms. That's why farm scrap is so important.

This big job has been undertaken by an army of more than 300,000 volunteer civilian workers, who have patriotically offered their services and trucking facilities to the local salvage committees, and they have done an outstanding job. Thousands of tons of high quality farm scrap have already been collected and sent to the scrap dealers' yards, where it has been sorted, processed, loaded and shipped to the steel mills.

10 SOUND REASONS FOR USING



Bordeaux mixtures which effectively control fungous diseases depend on the elimination of guesswork and haphazard methods of determining the amount of Copper Sulfate in the spray mixture. Nichols Triangle Brand "Instant" Copper Sulfate gives you these 10 advantages:

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2. **GREATER SAFETY** . . . Control of mixture means increased safety.
3. **BETTER MIXTURES** . . . Dissolves instantly and completely.
4. **ECONOMY** . . . No waste, no sediment, no undissolved crystals. **YOU USE IT ALL!**
5. **EFFICIENCY** . . . 99% pure, 100% efficient.
6. **FASTER OPERATIONS** . . . Saves time, labor . . . mixes directly in the spray tank. Requires no agitation.
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10. **PRODUCED IN 3 LARGE PLANTS** . . . Your dealer can always supply you because of three strategically located plants.

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By A. Freeman Mason

A complete and up-to-date book on the control of insects and diseases by sprays, dusts and fumigants. The first part details the history of spraying, the principles underlying spraying practices, the composition and properties of insecticides and fungicides, how to select and use spraying machines, the principles of dusting and fumigating, and the composition and properties of dusts and fumigants. Separate chapters consider the pests of the various fruits and vegetables. Each chapter includes a key for diagnosing the troubles of the plant by means of a brief description of the causes and symptoms. 538 pages. Illustrated. Sent postpaid on receipt of \$3.00

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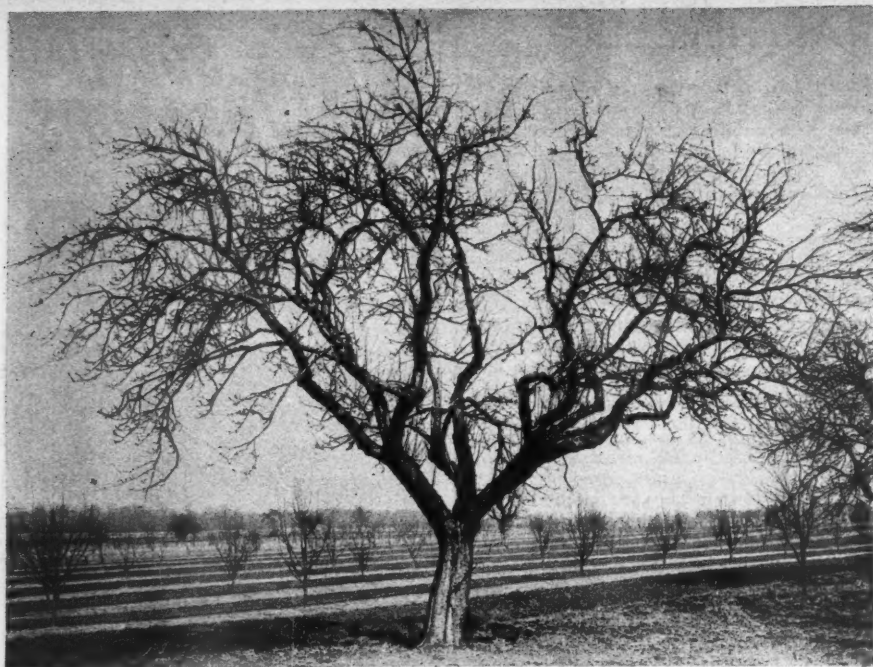
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Mature apple tree with too few bearing branches to produce a good yield.

BEGIN TREE PRUNING AT FIRST OPPORTUNITY

By M. A. BLAKE

THE pruning of peach trees is sometimes delayed until late spring in order to obtain a measure of any possible winter injury to buds before the work is done. It may be possible to get the peach orchard pruned in late spring when there is an ample amount of labor, but even then late pruning is often rather hurriedly and not too well done. Growers who have peaches at favorable elevations and especially those who have a considerable amount of pruning to be done should begin early this year. Growers who produce both apples and peaches often do their apple pruning first. This may be for at least two reasons: First, the buds of apples are seldom winter injured so that growers feel more certain about the prospective crop than they do with their peaches. Secondly, it is more unpleasant to prune large apple trees during the cold days of winter than peach trees. One can keep warmer on the ground than in the tops of apple trees.

Many growers of bearing apple trees, particularly of Rome, have done rather thorough pruning during the past few years. Producers of Rome apples in parts of southern New Jersey especially have pruned out the bearing wood of the trees rather heavily. Such pruning tends to reduce the necessity for propping the trees, and there will be less matting together of the lower branches.

This most practical article on tree pruning, written by M. A. Blake, Chief in Horticulture, Agricultural Experiment Station, New Brunswick, N.J., was published recently in *Horticultural News*, the publication of the New Jersey State Horticultural Society of which Prof. Blake is Editor. It is herewith reprinted, by permission, because it contains sound advice and information for peach and apple growers everywhere. —Editors.

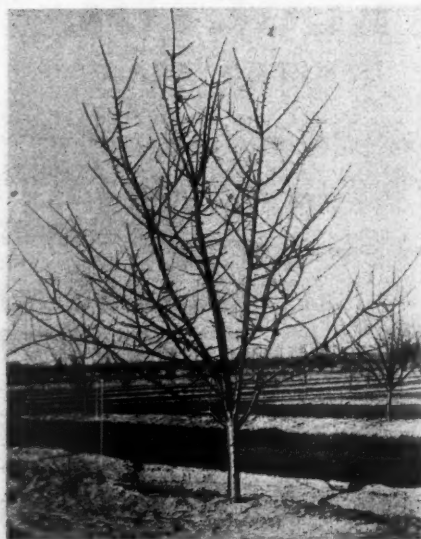
The crop on such trees may appear to be of better average size and color. In many cases, however, it does reduce the yield of the crop from 5 to 10 bushels per tree. Where as many as from 30 to 50 trees are grown per acre, the total reduction in yield is quite considerable. However, growers may prefer to produce a crop of 300 bushels of Rome rather than one of 400-500 and do the necessary thinning and propping of the trees in order to obtain suitable color of the fruits borne on the inside and underneath branches, and to resort to propping to prevent matting together and breakage of branches.

There are two styles of framework in pruning practices in apple orchards in the various apple districts of the country. In some states, including Virginia, it is the practice of many growers to allow the tips of the main branches of the trees to extend

down to within 2 or 3 feet of the ground. This permits of the harvesting of a considerable amount of fruit from the ground or from short step-ladders. Other growers prune their trees so that the tips of the branches are not closer to the ground than 5 to 7 feet during the spring and summer, which permits getting under the trees rather readily for spraying from the inside. Many growers in Virginia and elsewhere maintain, however, that the control of such insects as codling moth is just as satisfactory upon trees with low branches as trees with relatively high branches. That has been the experience at New Brunswick. Where trees are allowed to branch low, more distance is required between trees than where branches are removed to a height of 5 to 6 feet. In other words, if one is to grow a crop of apples low down near the ground, the lower branches producing such fruit must have adequate light and space and not be battered and bruised by tillage and spray equipment.

There are many apple trees which do not require any considerable amount of pruning this year except where they have not been pruned in the past, or where there has been severe breakage. Where only a few suckers need to be removed, that can be done at almost any time during the winter. Young apple and peach trees are often neglected in pruning until they become several years old, but young trees should receive special attention in order to insure a strong and well-balanced framework. Young trees of both peach and apple are as often over-pruned as under-pruned, and 1/3 to 1/2 of the tops cut away. Such pruning of well shaped trees is excessive. The securing of a strong and well-balanced framework can only be done when the trees are young. It will save serious breakage later. The important thing this year is to do only

(Continued on page 35)



Young Stayman tree with poor framework pruning.

BEES

(Continued from page 12)

Or for those who have no personal ill feeling toward the bees there may arise the question of where to get them, especially in sufficient numbers. It is a sizable undertaking to move 100 colonies of bees into an orchard for the bloom period. I think that, unless a person wants to work with bees himself his best bet is to contact a commercial beeman or apiarist. If you don't know one see your county agent who probably has the names of the ones in your county. Most apiarists are willing to service your orchard as the fruit bloom quite generally comes in an off season for their labor and also at a time when the bees can use the honey. In fact, orange blossom and apple blossom honey is a real delicacy. Of course, at the present time, with labor and transportation problems, this will not be as easy as it sounds. Obviously you must guarantee that you will not spray your fruit trees while they are in bloom. It doesn't take much arsenate of lead to finish off a hive of bees.

If you want to take something less than the rheumatism cure be sure to staple the various parts of the hive securely together while moving and cover the entrance with wire screening so that the bees may get plenty of air. The best time to move them is early in the morning before dawn or on a cold day when the bees are not active.

What you may expect to pay for this service will vary with the locality. If the honey yield is sufficient the apiarist may be only too glad to offer his service free of charge, but if the bloom be light and opportunities for gathering honey from other types of bloom are unlikely you should expect to pay for such a service.

There was a time, not so long ago, when we probably wished that our bees had not done so well and we could have had something less than a bumper and surplus crop, but in the year of 1943 we need have no fear of a surplus and we should surely strain every effort to get a bumper crop so that the world may have plenty of vitamin filled fruit in the daily diet.

CALENDAR OF COMING MEETINGS and EXHIBITS

Jan. 6-7—Annual meeting of the Massachusetts Fruit Growers' Association, Worcester.—W. R. Cole, Sec'y, Amherst.

Jan. 6-7—Annual meeting of Maryland State Horticultural Society, Hagerstown. Subject to change.—A. F. Vierheller, Extension Horticulturist.

Jan. 12-14—Pennsylvania State Horticulture Association annual meeting, Harrisburg.—J. U. Ruef, Sec'y, State College.

JANUARY, 1943



They have covered a lot of ground in their time, these models of a bygone year. Yet now they face the severest test of all — growing a crop that must not fail in a year of long hours and hardship for all men and machines.

It's the old-timers with shaky bearings and tired pistons that have a battle on their hands. Without new machinery to take their place, they must carry a full load alongside the younger streamliners.

Can they stand the pace? That depends on how quickly you act. There is still a chance for your implement dealer to give all your machinery a thorough going-over. But you must let him get started immediately... order repairs in time to notify factories what will be needed.

There is a tender spot in your Allis-Chalmers dealer's heart for the old-timers he has sold. He has seen them introduce power farming in the community, pay for farms and send youngsters through school. With special pride, he is decorating them now with the Farm Commando eagle emblem... sending them out once again newly painted and "Ready to Roll!"



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Watch for your A-C dealer's Farm Commando machinery and tractor school—your chance to get first-hand tips from factory experts.

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Can you help me locate the following equipment, no obligation to me:

I have the following equipment for sale to someone who needs it:

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Jan. 13-15—Annual meeting of the New York State Horticultural Society, Rochester.—Roy P. McPherson, Sec'y.

Jan. 22—The annual meeting of the Minnesota Fruit Growers' Association will be held with the Minnesota State Horticultural Society at University Farm, St. Paul, during the Farm and Home Week, January 18 to 23. The exact date for the meeting is tentative, but it is expected to be held on Friday, January 22.—J. D. Winter, Sec'y, Mound.

Jan. 26-28—Annual meeting of the Ohio State Horticultural Society will probably be held in connection with Farmers' Week, Ohio State University. The exact dates will be announced later.—Frank H.

Beach, Extension Horticulturist, Columbus.

Jan. 27-29—Annual meeting of the New York State Horticultural Society, Kingston.—Roy P. McPherson, Sec'y.

Feb. 10-11—West Virginia State Horticultural Society annual meeting, Martinsburg.—Carroll R. Miller, Sec'y, Martinsburg.

Small-Fruit Culture

By James S. Shoemaker

Complete discussions of all phases of production and marketing of grapes, strawberries, bramble fruits, currants, gooseberries, blueberries, and cranberries feature this text and reference book. Written in an easily understandable style, the practical grower will find this volume both interesting and useful. 52 illustrations, 434 Pages. Sent postpaid on receipt of \$3.50.

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THE WATER-SOLUBLE DORMANT SPRAY

For control of bud moths and aphids on apples—use Elgetol—the water-soluble dormant spray. Elgetol is a non-irritating dinitro dormant spray that contains no oils. It combines ovicidal, insecticidal, and fungicidal action, having the endorsement of agricultural colleges and experiment stations.

In addition to aphids and bud moths, Elgetol controls twig borer, crown gall, oyster shell scale and other pests. Elgetol is compatible with oil, making it a dual purpose spray.

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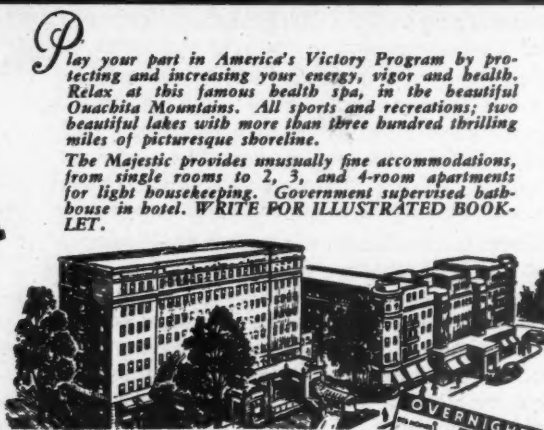


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The Majestic provides unusually fine accommodations, from single rooms to 2, 3, and 4-room apartments for light housekeeping. Government supervised bathhouse in hotel. WRITE FOR ILLUSTRATED BOOK-LET.

FERTILIZER SITUATION

(Continued from page 29)

spring is taken into the tree throughout the growing season and the greatest effect is seen the year following application rather than the year in which the nitrogen is applied.

If nitrogen is applied in the fall, investigations have shown that considerable quantities are taken into the roots during the winter season. Controlled experiments at Beltsville have indicated that in sandy soils large quantities of nitrogen will be taken into the roots even though the soil temperature may be near freezing. On heavier soils the rate of intake with roots at low temperatures is considerably slower than in the more open soils. This nitrogen that actually enters the roots during the winter months is available for the growth of the tree in the spring following. On the other hand, if there should be heavy rains during the fall and early winter, some of the nitrogen applied in the fall will be leached below the main root concentration before it is absorbed. Thus a fall application appears to be ideal from the standpoint of having the nitrogen available in the tree when needed but in seasons or areas of heavy winter rainfall it may be somewhat more wasteful of nitrogen than are spring applications.

Because of the heavier pruning usually practiced and a somewhat different growth habit, peach trees normally grow much later in the season than do apples. Thus it appears to be somewhat less essential in the case of peach trees to have the nitrogen applied in the fall or very early in the spring. Thus the common practice of applying part of the nitrogen after it is known that a crop of fruit has been set appears to be sound in the case of peaches. With apples, however, the soundest practice, at least in the relatively mild parts of the country, would appear to be the application of a part of the nitrogen immediately after harvest in the fall, with an additional application fairly early in the spring.

In our experiments, applications of nitrogen to apples after blossoming has tended to reduce the color of the fruit as compared to that on trees receiving the same total amount either in the fall or very early in the spring. Since color is an important factor in the market value of the crop and since the fall or very early spring applications have been fully as satisfactory from the standpoint of tree growth and quantity of fruit, we believe summer applications of nitrogen on apples should be avoided.

Proper fertilization of orchards is one of the most important steps in maintaining the high wartime production so essential to our country's welfare. The fertilizer materials will apparently be available to meet the needs of highly essential crop production.

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Plant Maloney's selected, hardy, super strains of APPLE, PEACH, PEAR, PLUM, CHERRY, BERRIES, SHRUBS, ROSES and SEEDS. Write for large FREE COLORED CATALOG (largest ever).

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SPRAYER SUPPLY MFG. CO., Grand Rapids, Mich.
AMERICAN FRUIT GROWER

BEGIN TREE PRUNING AT THE FIRST OPPORTUNITY

(Continued from page 32)

such pruning as is necessary and to begin it early, whether apples or peaches.

Annual pruning of peach trees is necessary if they are to maintain a desirable form and be relatively easy to pick. When the main branches are not cut back they soon become so tall that stepladders are required when the fruit is harvested. Unpruned or too lightly pruned peach trees contain too many small and weak fruiting twigs. Such trees require more thinning of the small green fruits, which is expensive. As bearing peach trees become old there may be too little fruiting wood upon the lower parts of the main branches, because shoot growth is kept pruned off. Shoots should be allowed to form on the main branches of mature trees, beginning at a distance of about 3 feet out from the trunk. If these are properly located and pruned, the top of a tree can be lowered and renewed by cutting back the old somewhat.

It requires labor with some skill and judgement to prune young peach trees. Such labor is now scarce in most localities. Therefore, it is well to begin the pruning as soon as most of the leaves are off. Weather conditions are much more favorable for pruning in November and December than during January and February. Prune the most valuable trees first, and particularly young bearing trees which developed an excess of fruiting wood in 1942, or are making a too upright growth which tends to shade and dominate the lower fruiting branches. Some growers in the South try to prune their trees so that all of the fruit can be picked from the ground without the use of stepladders.

Patriotic Pump Book

Just published is a Pump Book designed to help pump owners help themselves in so far as pump care and maintenance are concerned. This handy manual, entitled "The Care and Maintenance of Pumps and Water Systems," has been prepared by The F. E. Myers & Bro. Co., for owner guidance in the care and maintenance of various types of pumps in general use—whether of Myers or other manufacturers. It is hoped this book will be of practical value to all pump users during the critical wartime period when new equipment is difficult to obtain and the uninterrupted operation of present machinery is so essential. A postcard to The F. E. Myers & Bro. Co., Ashland, Ohio, will bring you a copy of this most useful booklet.

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In this book Peyton Boswell reveals every secret he employed at U. S. Winery No. 59 which will benefit the home wine maker or the small winery. Whoever follows the methods described cannot fail to make the best possible wine from the variety of grapes he uses. Written in easy, understandable style. Illustrated. Sent postpaid on receipt of \$1.50.

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JANUARY, 1943

NEW

- APPLE SIZING MACHINE
- RABBIT REPELLENT
- CORRUGATED ASPHALT SIDING
- AIF NEWS

APPLE SIZING MACHINE •

A new apple sizing machine of sturdy but simple construction has been developed by Arnold Ulrich of the Ulrich Fruit Farm, Rochester, Minnesota. It is adapted to handle the crop from small orchards, as well as fruit in larger volume. Mr. Ulrich has spent several years developing this machine, during which time a number of experimental models have been con-



structed. Patents are now applied for and production is ready to start when materials become available.

The action of the machine is smooth and it handles the fruit as gently as human hands. Feeders place the apples in a series of sizing forms as shown in the accompanying photograph. Each apple travels from one sizing form to another until it finds a hole large enough to fall through, or until it rolls over the end of the machine into a bin placed there. This action is continuous, the feeder picking up a new supply of apples with each revolution. The machine is always full as long as there are apples on the conveyor.

Among the special features is a small roller that comes up under the sizing forms to dislodge any fruit that may have become stuck. Fruit that is not handled until several weeks after picking sometimes becomes very waxy and sticky and is hard to handle in sizing forms without this feature. Another special feature is an offset on each sizing form so that flat apples such as Cortland will be thrown off balance and roll.

This machine can be constructed of different capacities according to the number of sizing forms used; one with 8 forms in width being capable of handling 50 to 60 bushels per hour. The machine sorts the fruit into 5 sizes, to the quarter of an inch.

RABBIT REPELLENT •

A liquid paint mixture which acts as a repellent to rabbits has recently been developed by the U. S. Fish and Wildlife Service and has proved very satisfactory in protecting both seedlings and larger trees from the rabbits.

A mixture of rezyl, ethylene dichloride, asphalt emulsion, copper sulphate, copper carbonate, and dry lime sulphur, the paint is obtainable from the Fish and Wildlife Service, through its Nevada office in Reno, and through agricultural extension agents, at cost.

One gallon of the solution will treat from two hundred to one thousand year-old seedlings or approximately an area of 300 square feet of bark surface on large trees.

The number and area that can be treated with one gallon varies as to the seedling size, species, and the roughness of the bark.

It is recommended that the repellent be applied as a paint with a 3-inch brush. The mixture should always be stirred well before using, since the asphalt tends to settle and should be applied to the trunk or branches within reach of the rabbits.

In some cases one application may give some protection during the second year, but it is best to treat once a year prior to the period of attack.

CORRUGATED ASPHALT SIDING •

Rags and resin have been combined into a war emergency building material substitute for corrugated steel sheets. Called corrugated asphalt siding, the new product was recently placed on the market by The Celotex Corporation, of Chicago, and is being used for both government and private construction.

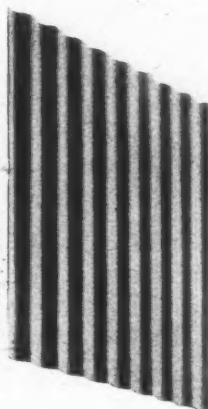
The new product is designed for wartime application on industrial, commercial and farm buildings and can replace corrugated

steel sheets used for covering outside walls of temporary structures of all kinds, including storage and machine sheds, dairy barns and drying sheds.

Corrugated asphalt siding consists of two sheets of heavy felt saturated with a recently developed resino-bituminous compound. The sheets are bound together with a high melting-point asphalt adhesive and corrugated under high pressure.

The finished sheets are hard, rigid, light in weight and moisture-proof. They retain their stiffness and corrugations in summer weather and are available in five sizes—28" x 6', 7', 9' and 10'. It is applied in the same general manner as corrugated steel sheets.

The life of these siding sheets can be prolonged indefinitely by painting immediately after application and every few years thereafter.



AIF NEWS •

The Agricultural Insecticide and Fungicide Association inaugurated in December a news service called the AIF News.

The major purpose of the AIF News is to acquaint county agricultural agents, extension specialists, research and regulatory workers, dealers and suppliers and others who work with and for the fruit grower, with the factual information and problems of the insecticide and fungicide industry in general.

The industry, in keeping with its pledge to protect food for freedom, is redoubling its efforts to gather the information needed in effective plant pest control activities and to the publication of such information the AIF news is dedicated.

LEAD TOLERANCE

(Continued from page 22)

percent hydrochloric acid by weight. In Illinois, lead residues as high as .220 to .230 grains per pound, resulting from the application of second-brood cover sprays of lead arsenate, lime, soybean flour and soybean oil up to August 10, have been reduced to .035 by 30 seconds exposure to 1¼ percent hydrochloric acid at 70° F. in an underbrush flood-type commercial washer. This is safely within the tolerance. A means for heating the solution should always be provided, so that an effective temperature can be maintained. It is also to the grower's advantage to have his apples analyzed before and after washing. The effect of washing cannot be exactly predicted; an analysis may enable him to reduce the concentration or temperature of the acid bath and thus avoid a certain amount of injury; on the other hand, he may find that he needs to raise the temperature of the bath. In the eastern part of the United States, however, it would seem that the spray schedule can be adjusted to make washing above 70° F. unnecessary.

In the state of Washington, according to F. L. Overley, there has been a very marked reduction in washing injury as the result of raising the tolerances. However, injury has not been eliminated by any means. It appears that some lots of fruit are readily injured even with the mildest washing program. This he attributes in part to growing conditions coupled with the type of spray material used, a condition which also holds true in the eastern part of the United States. In Washington, the general result has been reduced washing temperatures, and a trend from tandem washing in sodium silicate followed by hydrochloric acid toward a single bath of hydrochloric acid. However, central plants find it still necessary to use tandem washers because not all growers follow a program resulting in easier washing. In addition to ease of washing and less injury, other benefits resulting in Washington are better control of codling moth, due to the possibility of heavier spraying, less cost to growers for chemical analyses, and less rewashing, with its attendant increase in injury due to bruising, stem punctures and acid.

A serious problem which will confront the apple industry in 1943 wherever apples must be washed is the procurement of repairs to washing machinery. Repairs could be secured only with great difficulty in 1942; the source so far has been manufacturers' and distributors' carry-over; due to the war new repairs and new equipment have not been manufactured.



MARKETING



FOUR HUNDRED ACRES OF SUCCESS

By JONAS HOWARD

"MY brother and I have planted and grown every single tree on these 400 acres and made it pay for itself," said E. C. Crumpacker who stood with his brother J. S. Crumpacker on a hill overlooking their huge orchards. The Crumpackers are probably the largest growers of peaches in Virginia having over 250 acres in peaches and about 150 acres in apples. Together with their sons Raymond and Morris, the Crumpackers own and make their livelihood from their 400 acre orchard not far from Roanoke, Virginia.

Their peach orchards which vary from young none-bearing trees to one block 30 years old lie up against a mountain at the edge of their property. The soil here is sandy, a good peach soil, and down 12 to 15 inches is a clay subsoil which the Crumpackers claim holds improvements they make to the soil. All 400 acres are in sod but it is necessary to clean cultivate directly under the trees with grubbing hoes to fight off mice which are a serious menace in the orchard. "The mice are terrible," said J. S. Crumpacker "and we can't entirely use the mulch system because of them."

The Crumpackers keep 30 head of cattle but say the manure is more valuable than the cattle. They fertilize and prune thoroughly and are excellent orchard operators.

An unusual feature is a 10,000 gallon reservoir located over against the mountain. A tall indicator is at its side so that it is possible to tell from any part of the orchard how full the reservoir is.

Although employing a large number of men, the Crumpackers have had no difficulty getting labor for their orchard. The drought this fall hurt them quite a bit. That, together with an unusually heavy crop last year reduced their apple crop to 20,000 bushels.



"No sales on Sunday" says the sign at the entrance to the Crumpacker orchards.



From a hilltop one sees the Crumpacker orchards (above) stretching far before the eyes, 250 acres of peaches and 150 acres in apples.

The Crumpacker brothers, E. C. and J. S., still take an active part in orchard operations, and each can wield a practised pruning saw.



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For many months, most of the "Friend" organization's efforts have been devoted to the production of equipment for our Armed Forces.

Winning the War is the job that comes first—and all of us, here at "Friend", have worked harder than ever before to fulfill our responsibility to America's gallant fighting men.

But . . . Food Production is also Essential

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Here at "Friend" we are doing our very best, under the conditions existing, to meet the needs of our customers for new parts and complete new sprayers.

When you can buy a sprayer, it will pay you to choose carefully, to make sure that you get

the Simplest and Most Reliable Sprayer built

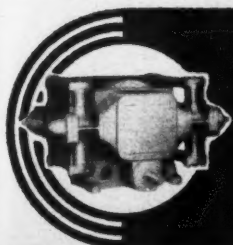
The "Friend" has only $\frac{1}{2}$ to $\frac{1}{3}$ as many moving parts as other sprayers: No crankshafts or connecting rods; no wrist pins; no plunger cups. And *no cylinder lining*—the "Friend" pump's plungers don't touch the cylinder walls.

Complete Lubrication of all moving parts—including the plungers—has been a "Friend" feature for more than 30 years.

You never need spray with a leaky pump—the "Friend's" packing can be taken up instantly, from the outside. Valves and controller are outside, for instant cleaning. Every part is easy to get at.

You cannot realize what an immense improvement the "Friend" will make in your spraying, until you use one. Talk to growers who have switched to the "Friend" after owning two or three sprayers of other makes. They will tell you that the differences in Dependability and Repair Cost are almost unbelievable.

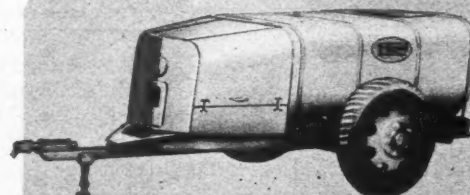
"FRIEND" MFG. CO. GASPORT, N. Y.
SPRAYERS • DUSTERS • FRUIT SIZERS AND CLEANERS



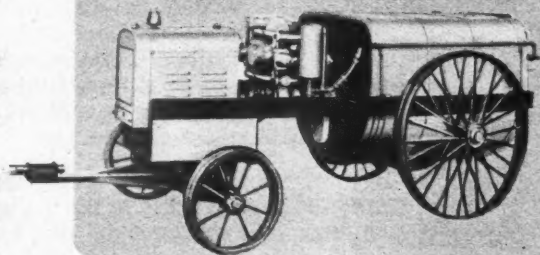
Easiest to Maintain
in Working Order--

Fewest Moving Parts

"FRIEND"



Two of the many "Friend" mountings are illustrated here: A Tractor-Trailer sprayer, and a Cut-under, with short turning 4-wheel trucks, originated by "Friend".



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"FRIEND" MFG. CO., Gasport, N. Y.

☐ **Send your new 1943 Spray Record Card,** giving useful data on tree coverage, friction loss, required nozzle sizes—and many more facts and figures that you need when spraying.

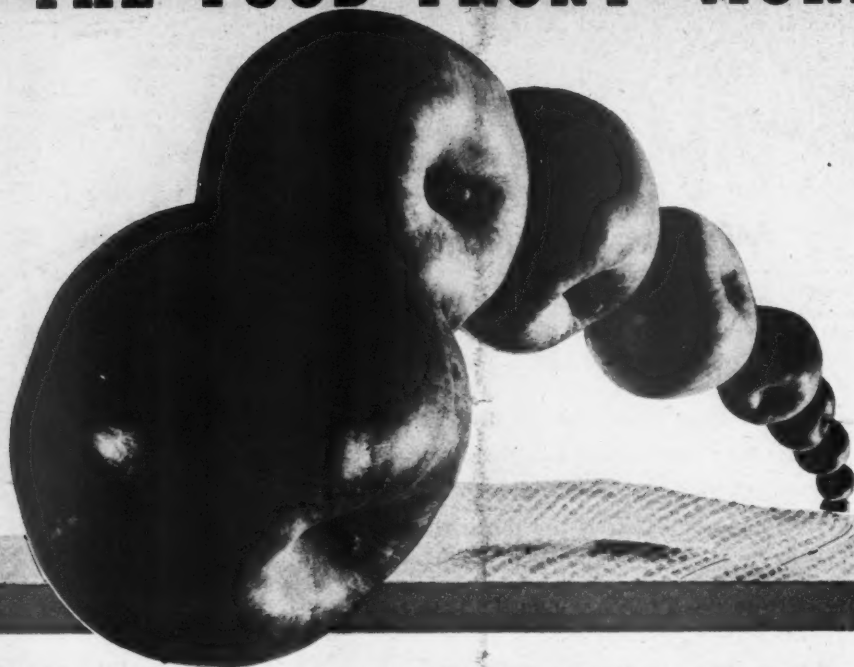
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Dowspray Dormant contains the toxicant dissolved in oil and is ready to use as a tank mix emulsion.

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Control Rosy Aphid, Early Green Aphid and Bud Aphid on apples and Black Aphid on cherries with 1½ lb. DN-Dry Mix in 100 gallons of water.

If San José, Scurfy or Oyster Shell Scale are present, in addition to aphids, use DN-Dry Mix in combination with oil as directed by your state experiment station.

Discuss DN-Dormant sprays with your dealer, or write us for complete information.

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